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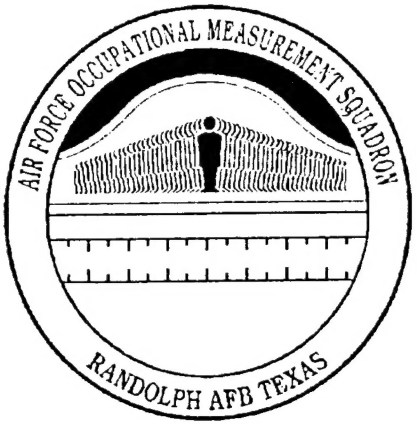

OCCUPATIONAL SURVEY REPORT

AIRCRAFT FUEL SYSTEMS

AFSC 2A6X4

AFPT 90-454-906

NOVEMBER 1994

OCCUPATIONAL ANALYSIS PROGRAM
AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON
AIR EDUCATION and TRAINING COMMAND
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PREFACE

This report presents the results of an occupational survey of the Aircraft Fuel Systems Maintenance career ladder, AFSC 2A6X4 (formerly 454X3). Authority for conducting occupational surveys is found in AFI 36-2623. Computer products used in this report are available for use by operations and training officials.

Lieutenant Kimberly G. Williams, Occupational Analyst, developed the survey instrument, and Captain Charles T. McIntyre analyzed the data and wrote the final report. Master Sergeant Cornelia J. Wharton provided programming support, and Mr. Richard G. Ramos provided administrative support. This report has been reviewed and approved for release by Major Randall C. Agee, Chief, Airman Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies may be requested from the USAF Occupational Measurement Squadron, Attention: Chief, Occupational Analysis Flight (OMY), 1550 5th Street East, Randolph AFB Texas 78150-4449.

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SUMMARY OF RESULTS

1. *Survey Coverage*: This report is based on responses from 1,145 AFSC 2A6X4 respondents representing 63 percent of all eligible AFSC 2A6X4 personnel.

2. *Specialty Jobs*: This specialty is extremely stable and homogenous with the majority of personnel working in the fuel systems maintenance job. Structure analysis identified one job cluster and eight independent jobs: Aircraft Preparation job, Fuel Systems Maintenance job, External Fuel Tank job, Shop/Shift Chief job, Cross Utilization Training job, Instructor job, Mobility job, Supervisory cluster, and Core Automated Maintenance System job. The cluster and independent jobs are discussed within this report.

3. *Career Ladder Progression*: AFSC 2A6X4 personnel follow an orderly skill-level progression. The 3-skill level personnel primarily perform basic technical tasks, while the 5-skill level personnel have a slightly broader job. The 7-skill level personnel have a more extensive job, with supervisory, administrative, and managerial tasks accounting for 29 percent of their time.

4. *AFMAN 36-2108 Specialty Descriptions*: The *AFMAN 36-2108 Specialty Descriptions* for the Aircraft Fuel Systems Maintenance career ladder (Apprentice and Craftsman) were reviewed. They provide an accurate description of the jobs performed at each skill level.

5. *Training*: An analysis of the current AFSC 2A6X4 STS and J3ABR45433 Plan of Instruction (POI) shows that both documents are extremely sound. All of the Specialty Training Standard (STS) items and POI learning objectives were supported; however, numerous technical tasks were not referenced to either document. A new STS was reviewed and approved at the April 1994 Utilization and Training Workshop. The data support the new STS well. A list of tasks not referenced to each document should be reviewed by training personnel to ensure that both documents are complete.

6. *Job Satisfaction*: Overall, AFSC 2A6X4 respondents are satisfied with their jobs. When compared to other mission equipment maintenance specialties surveyed in 1993, AFSC 2A6X4 personnel show relatively similar job satisfaction, but show significantly higher perceived use of training, particularly within the 49-96 months and 97+ months Total Active Federal Military Service groups. When compared to the 1985 (AFSC 423X3) occupational survey report, there has been no significant change in job satisfaction. A comparison of major jobs identified in the current sample reveals that there is little difference in job satisfaction indicators across job groups.

7. *Implications*: The Aircraft Fuel Systems (AFSC 2A6X4) career ladder has not changed much since the last survey in 1985. The jobs still involve technical maintenance and standard support functions. Career ladder progression is typical, and the *AFMAN 36-2108 Specialty Descriptions* are accurate. The technical training program is sound, and both the STS and POI are well supported by survey data. Job satisfaction data show the members of the career ladder are generally satisfied with their jobs. No major changes to the career ladder are expected.

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OCCUPATIONAL SURVEY REPORT (OSR)
AIRCRAFT FUEL SYSTEMS
(AFSC 2A6X4)

INTRODUCTION

This is a report of an occupational survey of the Aircraft Fuel Systems career ladder (AFSC 2A6X4, formerly AFSC 454X3). This survey was conducted to collect current data for use in validating training documents. The current Specialty Training Standard (STS) is dated July 1990, and the Plan of Instruction (POI) for the entry-level course is dated January 1991. A new STS was developed and approved at the 25 April 1994 Utilization and Training Workshop. The last occupational survey for this career ladder was published in September 1985.

Background

As described in the *AFMAN 36-2108 Specialty Descriptions*, DAFSC 2A634 and 2A654 airmen remove, repair, install, and modify aircraft fuel systems to include integral fuel and water cell tanks, external tanks, and associated hardware and equipment. In addition to these duties, 7-skill level members inspect and advise on problems concerning the removal, repair, installation, and modification of aircraft fuel systems. They also perform supervisory and maintenance staff functions.

Initial 3-skill level training is provided through a 7-week, 2-day course at Sheppard AFB TX. The Apprentice Aircraft Fuel Systems Mechanic course, J3ABR2A634-000, includes instruction in the fundamentals of mechanics, with emphasis on the maintenance, servicing, and inspection of aircraft fuel systems. The course also covers basic flightline safety practices, use of support equipment, and care and use of special tools.

SURVEY METHODOLOGY

Inventory Development

Data for this survey were collected using USAF Job Inventory (JI), AFPT 90-454-906, dated October 1992. A preliminary task list was prepared after reviewing career ladder documents, tasks from the previous Aircraft Fuel System Maintenance JI, and data from the previous OSR. This preliminary task list was then validated through interviews with 24 subject-matter experts at the following organizations:

BASE	ORGANIZATIONS VISITED
Chanute AFB IL	3350 TTG/TTML
Travis AFB CA	60 EMS/MAESF
Nellis AFB NV	57 CRS/CRCF MS/MACF
Davis-Monthan AFB AZ	355 CRS/CRCF
Luke AFB AZ	58 MS/MACB
Dyess AFB TX	96 FMS/LAFAF
Barksdale AFB LA	2 MS/LGFCF

The final JI contains 553 tasks grouped under 17 duty headings, with standard background questions asking respondents to indicate paygrade, duty title, time in service, time in present job, time in career field, and job satisfaction. Additional background questions concerning inspections, and equipment and forms usage were also asked. Responses to these questions are of use to functional and training personnel.

Survey Administration

Eligible survey respondents were selected from Uniform Airmen Record data tapes supplied by the Air Force Military Personnel Center. Eligible members for the survey consisted of the total assigned 3-, 5-, and 7-skill level population, excluding the following: (1) hospitalized personnel; (2) personnel in transition for a permanent change of station; (3) personnel retiring during the time

inventories were administered to the field; and (4) personnel in their jobs less than 6 weeks. From February to June 1993, Military Personnel Flights at operational bases worldwide administered the JI to Aircraft Fuel System Maintenance personnel.

Each individual who filled out an inventory first completed the identification and biographical information section. Next, respondents answered questions in the background portion of the inventory. They were then instructed to go through the booklet and check each task they perform in their current job. Finally, they were asked to go back and rate the relative amount of time spent on each task performed using a 9-point scale. Time-spent ratings range from 1 (indicating a very small amount of time spent) to 9 (indicating a very large amount of time spent).

Using the Comprehensive Occupational Data Analysis Programs (CODAP), we calculated the relative percent time each respondent spent performing tasks by first totaling each respondent's ratings on all tasks marked, dividing the ratings for each task by this total, and multiplying by 100. Percent time spent ratings from all respondents were used, along with percent members performing (PMP) information, to create individual position descriptions. These job descriptions were then analyzed to describe various groups in the career ladder.

Survey Sample

The final sample includes responses from 1,145 AFSC 2A6X4 respondents, 63 percent of the assigned population. Tables 1 and 2 compare the MAJCOM and paygrade distributions of all assigned personnel to that of the sample. Both tables show that the sample adequately represents the population.

Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs. Task factor data were collected by asking selected E-6 and E-7 NCOs to complete either a training emphasis (TE) or task difficulty (TD) booklet. These booklets are processed separately from the JIs, and the TE and TD data are considered when analyzing other issues in the survey.

Training Emphasis (TE). TE is defined as the amount of structured training first-enlistment personnel need to perform tasks successfully. Structured training is defined as training provided by resident technical schools, field training detachments, mobile training teams, formal on-the-job training (OJT), or any other organized training method. Thirty-nine experienced AFSC 2A6X4 NCOs rated the tasks in the inventory on a 10-point scale ranging from 0 (no training required) to 9 (extremely high TE). Interrater agreement for these 39 raters was acceptable. The average TE rating is 2.51, with a standard deviation of 1.55. Any task with a TE rating of 4.06 or greater is considered to have a high TE.

TABLE 1

MAJCOM REPRESENTATION OF SAMPLE
AFSC 2A6X4

COMMAND	PERCENT ASSIGNED* (N=1,811)	PERCENT OF SAMPLE (N=1,145)
ACC	45	45
AMC	16	15
PACAF	13	14
USAFE	14	11
AETC	3	8
AFMC	6	4
AFSOC	3	3

Total Assigned = 1,811
Total in Survey Sample = 1,145
Percent of Assigned in Sample = 63%
Percent of Surveyed in Sample = 68%

* Assigned strength as of February 1993

TABLE 2

PAYGRADE DISTRIBUTION OF SAMPLE
AFSC 2A6X4

PAYGRADE	PERCENT ASSIGNED (N=1,811)	PERCENT IN SAMPLE (N=1,145)
E-1 TO E-3	16	15
E-4	28	29
E-5	27	30
E-6	19	17
E-7	10	9
E-8	*	0
E-9	0	0

* Denotes less than 1 percent

NOTE: Assigned strength as of August 1993

Task Difficulty (TD). TD is defined as an estimate of the length of time the average airman takes to learn how to perform a task. Fifty-eight experienced NCOs rated the difficulty of tasks on a 9-point scale ranging from 1 (easy to learn) to 9 (very difficult to learn). Interrater agreement was again acceptable. TD ratings are normally adjusted so tasks have an average difficulty value of 5.0, with a standard deviation of 1.0. Thus, any task with a TD rating of 6.00 or above is considered difficult to learn. TE and TD ratings, when used with percent members performing values, can provide insight into first-enlistment training requirements, help validate the need for structured training, and aid in the evaluation of the plan of instruction (POI) for a career ladder.

CAREER LADDER STRUCTURE

The first step in the analysis process is to identify the career ladder structure in terms of jobs performed by the respondents. CODAP assists by creating a job description for each respondent based on the tasks performed and relative amount of time spent on these tasks. The CODAP automated clustering program compares all individual descriptions, locates the two job descriptions with the most similar tasks and percent time ratings, and combines them to form a composite job description. In successive stages, new members are added to the initial groups, or new groups are formed based on the similarity of tasks performed and time spent. This process continues until all possible respondents are included in a group.

The basic grouping in the hierarchical clustering process is the job. When there is a substantial degree of similarity between jobs, they are grouped together and identified as a cluster. The structure of the Aircraft Fuel Systems Maintenance career ladder is defined in terms of the jobs and clusters that the 1,145 respondents perform.

Overview

Analysis of the data shows AFSC 2A6X4 personnel perform work related to one cluster and eight jobs. Most members in the career ladder perform tasks that fall in the Fuel System Maintenance job. The remaining jobs involve work related to aircraft preparation, external fuel tanks, shop/shift chief duties, cross utilization training (CUT) duties, instructors, mobility, Core Automated Maintenance System (CAMS), and a supervisory cluster containing career field and training supervisors.

The job structure is displayed graphically in Figure 1 and in the outline presented below. The stage (STG) number listed beside each job title is a reference number assigned by CODAP, while the letter "N" refers to the number of respondents performing the job.

I. AIRCRAFT PREPARATION JOB (STG67, N=36)

II. FUEL SYSTEMS MAINTENANCE JOB (STG63, N=874)

III. EXTERNAL FUEL TANK JOB (GRP34, N=26)

IV. SHOP OR SHIFT CHIEF JOB (STG75, N=65)

V. CROSS UTILIZATION TRAINING (CUT) JOB (STG124, N=5)

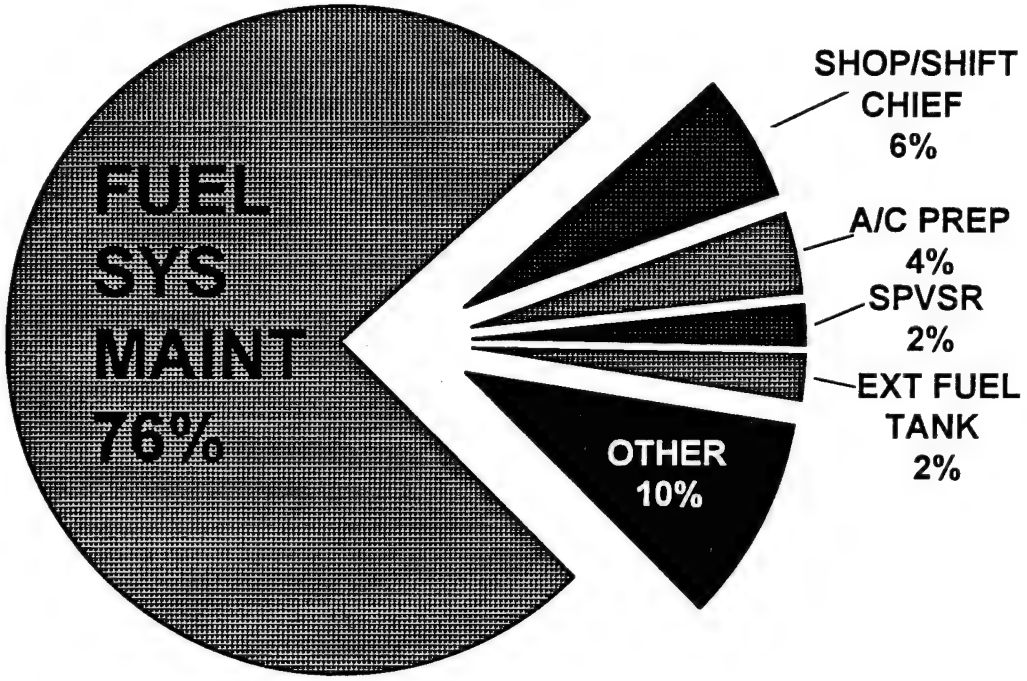
VI. INSTRUCTOR JOB (STG20, N=13)

VII. MOBILITY JOB (STG72, N=6)

VIII. SUPERVISORY CLUSTER (STG55, N=25)

A. SUPERVISORS (STG71, N=19)
B. TRAINERS (STG132, N=6)

IX. CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) JOB (STG86, N=6)



OTHER INCLUDES: CUT, INSTRUCTORS, CAMS, AND MOBILITY

FIGURE 1

The amount of time that members of career ladder jobs spend on duties is presented in Table 3, while selected background data are presented in Table 4. Brief descriptions of each job are presented below, while representative tasks performed are listed in Appendix A.

I. AIRCRAFT PREPARATION JOB (STG67, N=36). The aircraft preparation job involves very basic tasks associated mainly with preparing aircraft for maintenance. Table 3 shows that most of the job time (38 percent) is spent preparing aircraft for maintenance (Duty H). Members perform an average of 64 tasks, suggesting a very limited range of technical duties. Representative tasks include:

ground equipment
bond equipment
position maintenance stands
test atmosphere of fuel tanks or cells for fire safe or health safe conditions
purge fuel tanks or cells using blow purge method
rope off fuel system repair areas
ground aircraft
depuddle fuel tanks or cells
remove or install boost pumps
clean work areas

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0023	AIRCRAFT PREPARATION	17	28	28	78
0022	LEAK DETECTION	10	5	33	39

Task module data show a job where time is focused mainly in the aircraft preparation module, with smaller amounts of time being spent in other areas. All modules, however, focus on aircraft preparation duties.

Personnel in this job average 68 months Total Active Federal Military Service (TAFMS), with 41 percent in their first enlistment. Fifty-eight percent hold the 5-skill level. Forty-four percent work normal (0700-1600) day shifts, while the remainder of the job is evenly dispersed between rotating, swing, and midshifts.

TABLE 3

TIME SPENT ACROSS DUTIES BY CAREER LADDER JOBS
(RELATIVE PERCENT OF TIME SPENT)

	DUTIES	ACFT PREP (N=36)	FUEL SYS MAINT (N=874)	EXT FUEL TANKS (N=26)	SHOP SHIFT CHIEF (N=65)	CUT (N=5)	INST (N=13)	MOB (N=6)	SUPVSR (N=25)	CAMS (N=6)
A	ORGANIZING AND PLANNING	1	2	3	10	3	4	12	21	16
B	DIRECTING AND IMPLEMENTING	1	4	6	17	6	9	11	24	10
C	INSPECTING AND EVALUATING	1	2	3	12	3	4	5	18	2
D	TRAINING	*	2	3	6	2	19	2	12	2
E	PERFORMING ADMINISTRATIVE FUNCTIONS	1	1	2	4	1	5	4	7	10
F	PERFORMING SUPPLY FUNCTIONS	1	2	5	6	2	2	14	7	1
G	PERFORMING SUPPORT FUNCTIONS	12	9	27	7	7	9	9	2	1
H	PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	38	16	12	6	25	13	1	1	0
I	TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	9	16	8	6	10	10	*	2	0
J	INSPECTING AIRCRAFT FUEL SYSTEMS	3	11	9	7	6	3	1	*	0

* Denotes less than 1 percent

TABLE 3 (CONTINUED)

TIME SPENT ACROSS DUTIES BY CAREER LADDER JOBS
(RELATIVE PERCENT OF TIME SPENT)

DUTIES	ACFT PREP (N=36)	FUEL SYS MAINT (N=874)	EXT FUEL TANKS (N=26)	SHOP SHIFT CHIEF (N=65)	CUT (N=5)	INST (N=13)	MOB (N=6)	SUPVSR (N=25)	CAMS (N=6)
K REMOVING AND INSTALLING FUEL SYSTEMS COMPONENTS	17	15	12	4	4	6	0	*	0
L REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	1	3	*	*	*	4	0	*	0
M REPAIRING INTEGRAL FUEL TANKS	9	8	3	2	4	10	0	*	0
N PERFORMING GENERAL WATER INJECTION SYSTEMS FUNCTIONS	*	*	*	*	0	0	*	0	0
O PERFORMING CROSS UTILIZATION TRAINING (CUT) DUTIES	1	1	1	*	27	*	0	*	0
P PERFORMING MOBILITY TASKS	1	2	1	2	0	0	37	1	1
Q PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) FUNCTIONS	4	6	5	11	1	3	2	5	57

* Denotes less than 1 percent

TABLE 4

SELECTED BACKGROUND DATA ON PERSONNEL IN CAREER LADDER JOBS

	GEN PREP (STG67)	FUEL SYS MAINT (STG63)	EXT FUEL TANKS (GRP34)	SHOP SHIFT CHIEF (STG75)	CUT (STG124)	INST (STG20)	MOB (STG72)	SUPVR (STG55)	CAMS (STG86)
NUMBER IN GROUP	36	874	26	65	5	13	6	25	6
PERCENT OF TOTAL SAMPLE	4%	76%	2%	6%	*	*	*	2%	*%
PERCENT IN CONUS	95%	55%	100%	63%	85%	73%	100%	100%	71%
SKILL-LEVEL DISTRIBUTION									
2A634	28%	5%	15%	0%	0%	0%	0%	0%	0%
2A654	58%	58%	69%	2%	20%	23%	0%	11%	50%
2A674	14%	37%	15%	98%	80%	77%	100%	89%	50%
PAYGRADE DISTRIBUTION									
AIRMEN	38%	17%	15%	0%	0%	0%	0%	0%	0%
E-4	31%	32%	50%	0%	20%	0%	0%	0%	33%
E-5	28%	33%	35%	8%	60%	38%	17%	8%	50%
E-6	3%	15%	0%	38%	20%	54%	50%	36%	0%
E-7	0%	3%	0%	52%	0%	8%	33%	56%	17%
E-8	0%	0%	0%	2%	0%	0%	0%	0%	0%
E-9	0%	0%	0%	0%	0%	0%	0%	0%	0%
AVERAGE MONTHS IN PRESENT JOB	25	60	38	52	39	46	24	69	19
AVERAGE MONTHS TAFMS	68	101	82	180	128	142	201	189	123
PERCENT FIRST ENLISTMENT	41%	23%	28%	0%	0%	8%	0%	0%	0%
AVERAGE NUMBER OF TASKS PERFORMED	64	184	85	183	85	54	53	56	21

* Denotes less than 1 percent

II. FUEL SYSTEMS MAINTENANCE JOB (STG63, N=874). This is the core job of the career ladder. Job time is spread evenly between preparing aircraft for maintenance, troubleshooting fuel systems, inspecting fuel systems, and removing and installing components. Members perform an average of 184 tasks, suggesting a very broad range of responsibilities involving many of the same tasks as the aircraft preparation job, as well as systems maintenance tasks. Personnel performing this job are distinguished by the time they spend on the following tasks:

remove or install boost pumps
operationally check transfer systems
pull circuit breakers
perform red talcum powder tests
connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings
isolate malfunctions of vent systems
localize fuel leak exits
mix sealants by hand
inspect aircraft for presence of chocks or moorings
drain fuel tanks or cells

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0023	AIRCRAFT PREPARATION	17	11	11	92
0022	LEAK DETECTION	10	5	16	87
0024	INSPECTION	28	9	25	60
0001	SUPERVISION	19	4	29	43
0003	CAMS	19	4	33	40
0006	SCAVENGE SYSTEMS	8	1	34	34
0005	CREW CHIEF	4	1	35	34
0007	EXTERNAL FIXED FUEL TANKS	6	1	36	26

As expected, job time is spent disbursed throughout many specialized task modules which cover every aspect of fuel systems maintenance.

Personnel in this job have an average TAFMS of 101 months, with 23 percent in their first enlistment. Paygrades range from E-2 to E-7, with 65 percent being E-4s or E-5s, and 58 percent holding the 5-skill level. Like the previous job, members work a variety of shifts, spread across normal day shifts, rotating shifts, swing, and midshifts.

III. EXTERNAL FUEL TANK JOB (GRP34, N=26). This job is performed by personnel who work almost exclusively with external fuel tanks or on tank farms. Their time is focused mainly in support functions, aircraft preparation duties, and component installation and removal tasks. Personnel perform an average of 85 tasks, suggesting a more limited range of responsibilities than seen in the Fuel Systems Maintenance job. Some representative tasks are as follows:

clean work areas
remove or install external jettisonable fuel tank components
prepare external jettisonable fuel tanks for tank farms
clean external fuel tanks
maintain external fuel tank storage areas (tank farms)
inspect external jettisonable fuel tank components
assemble external jettisonable fuel tanks from nested containers or canisters
perform pressure checks on external jettisonable fuel tanks
perform transfer checks on external jettisonable fuel tanks
remove or install external tank nosecones or tailcones

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0009	EXTERNAL JETTISONABLE FUEL TANKS	20	25	25	66
0023	AIRCRAFT PREPARATION	17	10	35	47

As expected, the External Jettisonable Fuel Tank module is the most predominant module for this group, with tasks in this module being performed by an average of 66 percent of group members.

Members of this job average 82 months TAFMS, the second lowest for the career ladder, with 28 percent in their first enlistment. All personnel are E-5s or below, with 69 percent holding the 5-skill level. The largest percent of members (69 percent) work normal day shifts.

IV. SHOP OR SHIFT CHIEF JOB (STG75, N=65). This job is the first-line supervisory job for this career ladder. Most members indicated their job title as being either Shop Chief or Shift Chief. Forty percent of their time is spent in supervisory duties, while still maintaining proficiency with the technical tasks. Representative tasks which distinguish this job are as follows:

write EPRs
counsel personnel on personal or military-related matters
inspect work areas
determine work priorities
plan or schedule shifts or work assignments
direct shop housekeeping
perform self-inspections
annotate or attach equipment status labels or tags, such as DD Forms 1574
attend briefings
advise subordinates on supply problems

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0001	SUPERVISION	19	14	14	84
0014	MANAGEMENT	50	22	36	66
0013	SUPPLY	13	6	42	62
0002	OJT	4	2	44	62

Much of the job time for this group is spent in the first two modules, Supervision and Management, accounting for 36 percent of total job time. The rest of the job time is focused on more technical types of tasks, since these are the front-line supervisors.

Job members have the second highest average TAFMS of 180 months. Ninety percent are E-6s or E-7s, with 98 percent of them holding the 7-skill level. The majority of personnel job (71 percent) work normal day shifts.

V. CROSS UTILIZATION TRAINING (CUT) JOB (STG124, N=5). This is a job performed by very few personnel who spend over 50 percent of their job time on aircraft preparation and CUT duties. Personnel perform an average of 85 tasks, which indicates a narrowly defined job. Representative tasks are as follows:

launch or recover aircraft
position or remove aircraft chocks
marshall aircraft
install aircraft safety pins
ground aircraft
position maintenance stands
position fire extinguishers
inspect aircraft for presence of chocks or moorings
walk wings or tails during aircraft towing operations
tow aircraft

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0005	CREW CHIEF	4	8	8	90
0020	CROSS UTILIZATION TRAINING (CUT)	27	19	27	46
0023	AIRCRAFT PREPARATION	17	12	39	61
0022	LEAK DETECTION	10	5	44	54

As could be expected, personnel in this job spend much of their time in several different areas because their job is so diverse. Forty-four percent of their time is spread across four modules.

This is a fairly senior group of individuals, with an average TAFMS of 128 months. Sixty percent are E-5s and 80 percent hold the 7-level. Most personnel work a normal day shift.

VI. INSTRUCTOR JOB (STG20, N=13). This job is comprised of training personnel from the technical school. They perform a mixture of supervisory and instructor type tasks, as well as technical tasks necessary to teach the basics of the career ladder. The job is most limited as instructors perform only an average of 54 tasks. Representative tasks include:

administer or score tests
conduct resident course classroom instruction
demonstrate how to locate technical information
check personnel for proper clothing, equipment, spark- or flame-producing devices
counsel personnel on personal or military-related matters
attend briefings
ground equipment

inspect or evaluate training aids or equipment
maintain publication libraries containing materials, such as regulations or manuals
counsel resident course students on training progress

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent Sum	Percent Time Spent Cumulative	Avg. Percent Members Perf.
0015	TECH SCHOOL INSTRUCTOR	14	15	15	42
0012	TECHNICAL ORDERS	4	4	19	44

Not surprisingly, the top task module for this job involves Tech School Instructor tasks. Other modules, such as Technical Orders, fall into this job because knowledge of these tasks in necessary to teach.

Ninety-two percent of these personnel are E-5s or E-6s. They average 142 months TAFMS. Seventy-seven percent hold the 7-skill level.

VII. MOBILITY JOB (STG72, N=6). This small group only performs an average of 53 tasks, which is very low and indicates a very specific and focused job. Members are tasked with ensuring mobility readiness for the career ladder. They spend 51 percent of their time on mobility and supply functions. Members performing this job are distinguished by the time they spend performing the following tasks:

inspect and prepare mobility containers or pallets
inspect mobility boxes
identify, sequence, and place mobility containers on pallets
weatherproof mobility containers on pallets
build mobility crates or pallets
prepare itemized listings for mobility containers
prepare required shipping documents or forms or reshipment documents
assemble mobility boxes
accomplish mobility processing checklists
develop or improve work methods or procedures

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent Sum	Percent Time Spent Cumulative	Avg. Percent Members Perf.
0004	MOBILITY	22	37	37	73
0013	SUPPLY	13	12	49	45

Obviously, this job will spend the majority of its time (49 percent) in mobility and supply areas since these are the main focus of their duties.

This job is performed by E-5s, E-6, and E-7s. They average 201 months TAFMS, but only 24 months in their jobs. These personnel fill these mobility spots as a temporary assignment.

VIII. SUPERVISORY CLUSTER (STG55, N=25). This cluster represents the career ladder senior leadership. These personnel fill such jobs as Shop Superintendents and Systems Supervisors. They spend over 60 percent of their time in supervisory duties, with almost no time in any type of technical tasks. Typical tasks performed include:

attend briefings
write EPRs
counsel personnel on personal or military-related matters
determine work priorities
orient newly assigned personnel
establish or update organization policies, OIs, or SOPs
interpret policies, directives, or procedures
develop or improve work methods or procedures
participate in staff meetings
type correspondence, records, or reports

Representative task modules for this job cluster include:

TM	Module Title	No. of Tasks	Percent Time Spent Sum	Percent Time Spent Cumulative	Avg. Percent Members Perf.
0001	SUPERVISION	19	20	20	55
0014	MANAGEMENT	50	39	59	42

This job cluster differs from the Shop/Shift Chief job in that much more time (59 percent as opposed to 36 percent) is spent on supervisory and management types of tasks.

Personnel in this group have an average TAFMS of 189 months, and 96 percent hold the 7-skill level. The cluster is comprised of two job groups. One is performed by personnel who work with operational units handling normal personnel issues. The other is performed by technical school supervisors.

IX. CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) JOB (STG86, N=6). Personnel assigned to the CAMS job perform no aircraft maintenance tasks, but spend 57 percent of their time performing CAMS functions. The rest of their time is spent on supervisory and administrative tasks. They perform an average of 21 tasks, which shows that they are a very specialized job. They are distinguished by the time they spend performing the following CAMS tasks:

access CAMS menus and data screens
retrieve CAMS products
verify accuracy of daily inputs in CAMS
open or close CAMS
determine work priorities
perform CAMS inquiries for aircraft maintenance discrepancies
perform CAMS inquiries for uncompleted maintenance event listings
analyze CAMS data

Representative task modules for this job include:

TM	Module Title	No. of Tasks	Percent Time Spent		Avg. Percent Members Perf.
			Sum	Cumulative	
0003	CAMS	19	35	35	35

This group has an average TAFMS of 123 months and is evenly divided between the 5- and 7-skill levels.

Comparison of Current Group Descriptions to Previous Survey

The results of the specialty job analysis were compared to the previous OSR, dated September 1985. Table 5 lists the major jobs identified in the current report and their equivalent jobs from the previous OSR. A review of the jobs performed by the current sample indicates that the CAMS job, Mobility job, and CUT jobs were not identified in the previous report. Also, the previous report arranged the job groups somewhat differently than has been presented here. All the jobs found in the previous report were again identified in the current survey. The presence of a CAMS job reflects the growing reliance on automated maintenance data collection. The CUT and Mobility jobs reflect the growing emphasis in the USAF on readiness.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at various skill levels. This information may be used to evaluate how well career ladder documents, such as *AFMAN 36-2108 Specialty Descriptions* and STSs, reflect what career ladder personnel are actually doing in the field.

The distribution of skill-level groups across career ladder jobs in displayed in Table 6, while Table 7 offers another perspective as it displays percent time spent on each duty across skill-level groups. A typical pattern of career ladder progression is noted within AFSC 2A6X4, with 3-skill level personnel spending most of their time on technical tasks, while 5-skill level personnel are performing technical jobs, along with some training and administrative duties. Seven-skill level personnel perform fewer technical duties and spend 36 percent of their time on administrative-, supervisory-, and managerial-related tasks.

Skill-Level Descriptions

DAFSC 2A634. The 67 airmen in the 3-skill level group, representing 6 percent of the survey sample, perform an average of 124 tasks. As shown in Table 6, 76 percent of these airmen are in the Fuel Systems Maintenance job. They spend approximately 75 percent of their time performing aircraft preparation and maintenance activities, while the remainder of their time is spent in supply and support functions

Table 8 displays selected representative tasks performed by a majority of 3-skill level airmen. Examples of tasks likely to be performed include: bonding equipment, positioning maintenance stands, cleaning work areas, or grounding equipment.

TABLE 5

JOB SPECIALTY COMPARISON BETWEEN CURRENT AND 1985 SURVEY

CURRENT (N=1,145)	1985 (N=1,717)
Aircraft Preparation Job	Maintenance Preparation
Fuel Systems Maintenance Job	FSM Specialists and Technicians Flightline Maintenance Integral Tank Maintenance Removal/Installation
External Fuel Tank Job	Tank Repair War Reserve Materiel
Shop/Shift Chief Job	First-Line Supervisors
Cross Utilization Training (CUT) Job	Not Identified
Instructor Job	Not Identified
Mobility Job	Not Identified
Supervisory Cluster A. Supervisors B. Trainers	Senior Supervisor/Trainer A. Senior Supervisor B. Trainer
CAMS Job	Not Identified

TABLE 6

DISTRIBUTION OF DAFSC GROUP MEMBERS ACROSS CAREER LADDER JOBS
(PERCENT)

CAREER LADDER JOBS	2A634 (N=67)	2A654 (N=582)	2A674 (N=496)
I. Aircraft Preparation Job	17	4	1
II. Fuel Systems Maintenance Job	76	91	73
III. External Fuel Tank Job	7	3	*
IV. Shop/Shift Chief Job	0	*	14
V. CUT Job	0	*	1
VI. Instructor Job	0	*	2
VII. Mobility Job	0	0	1
VIII. Supervisory Cluster			
a. Supervisors	0	0	4
b. Trainers	0	*	1
IX. CAMS Job	0	*	*
X. Not Grouped	0	2	3

TABLE 7

TIME SPENT ON DUTIES BY MEMBERS OF SKILL-LEVEL GROUPS
(RELATIVE PERCENT OF JOB TIME)

DUTIES	2A634 (N=67)	2A654 (N=582)	2A674 (N=496)
ORGANIZING AND PLANNING	*	2	6
DIRECTING AND IMPLEMENTING	*	3	10
INSPECTING AND EVALUATING	*	2	6
TRAINING	*	1	4
PERFORMING ADMINISTRATIVE FUNCTIONS	*	1	3
PERFORMING SUPPLY FUNCTIONS	2	2	4
PERFORMING SUPPORT FUNCTIONS	13	10	8
PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	25	18	11
TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	16	15	10
INSPECTING AIRCRAFT FUEL SYSTEMS	8	9	10
REMOVING OR INSTALLING FUEL SYSTEMS COMPONENTS	18	16	10
REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	4	3	2
REPAIRING INTEGRAL FUEL TANKS	10	8	5
PERFORMING GENERAL WATER INJECTION SYSTEMS FUNCTIONS	*	*	*
PERFORMING CROSS UTILIZATION TRAINING (CUT) DUTIES	*	1	1
PERFORMING MOBILITY TASKS	*	2	2
PERFORMING CORE AUTOMATED SYSTEM (CAMS) FUNCTIONS	*	6	8

* Denotes less than 1 percent

NOTE: Numbers may not add to 100 percent due to rounding

TABLE 8

REPRESENTATIVE TASKS PERFORMED
BY DAFSC 2A634 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=67)
H179	Bond equipment	97
H203	Position maintenance stands	96
G141	Clean work areas	94
H193	Ground equipment	94
H205	Purge fuel tanks or cells using blow purge method	91
H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	87
K341	Remove or install boost pumps	87
H192	Ground aircraft	85
H200	Perform fuel system preparation checklists	85
H211	Rope off fuel system repair areas	85
H187	Depuddle fuel tanks or cells	85
H199	Notify fire departments of fuel systems maintenance	82
M429	Apply adhesion promoters prior to applying sealants	82
M449	Mix sealants using machines	81
M448	Mix sealants by hand	81
H194	Inspect aircraft for presence of chocks or moorings	79
K325	Connect or disconnect B-nut-type fittings	79
K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	78
H204	Pull circuit breakers	78
K376	Remove or install internally mounted fuel quantity probes	76
M435	Clean damaged sealant areas	75
K373	Remove or install integral tank or fuel cell access doors	73
H191	Drain fuel tanks or cells	73
I263	Perform red talcum powder tests	73
H201	Position drip pans	72
H195	Inspect aircraft for safety pin installation	72
I247	Perform air hose and external bubble tests	72
H210	Review aircraft maintenance forms for deficiencies	72
K358	Remove or install fuel cells	72
K324	Clean cavities	72
H208	Remove or install closure panels	69
K363	Remove or install fuel level control valves	69

DAFSC 2A654. The 582 airmen in the 5-skill level group represent 51 percent of the total survey sample and perform an average of 157 tasks. Table 7 shows that 5-skill level personnel spend 66 percent of their time performing aircraft preparation and maintenance duties; 9 percent on supervisory, training, and administrative duties; and the rest of their time is spent in supply and support functions. Representative tasks performed by 5-skill level incumbents are listed in Table 9.

Five-skill level personnel are differentiated from 3-skill level personnel based upon the level of complexity of technical tasks they perform, as well as by percent of job time spent on training- and supervisory-related tasks. Table 10 gives examples of tasks which best differentiate the 5-skill level personnel from their junior counterparts. Notice that the difference ratings for these tasks are all negative, which indicates that the 5-skill level members perform all the tasks of a 3-skill level member, as well as the listed tasks.

DAFSC 2A674. Seven-skill level personnel represent 43 percent of the survey sample and perform an average of 170 tasks. Twenty-nine percent of their relative job time is spent on tasks in supervisory, managerial, training, and administrative duties (more than twice that of 5-skill level personnel). The remainder of their time is dedicated to technical duties (see Table 7). Table 11 lists representative tasks for these incumbents.

Tasks which best distinguish 7-skill level personnel from their junior counterparts are presented in Table 12. As expected, the key difference is a much greater emphasis on supervisory functions. Again, the negative values for the differences indicate that the 7-skill level members are performing the same tasks as the 5-skill level members, in addition to their 7-skill level duties.

Summary

Normal career ladder progression within the AFSC 2A6X4 career ladder is evident, with personnel at the 3-skill level spending the vast majority of their job time performing technical tasks. A slight shift towards supervisory function occurs at the 5-skill level, with members still spending more than 85 percent of their duty time performing technical functions. Personnel at the 7-skill level still primarily perform technical functions; however, they spend considerably more duty time on supervisory functions than their junior counterparts.

ANALYSIS OF *AFMAN 36-2108 SPECIALTY DESCRIPTIONS*

Survey data were compared to the *AFMAN 36-2108 Specialty Descriptions* for Aircraft Fuel Systems Maintenance, dated 30 April 1991. The descriptions for the 3-, 5-, and 7-skill levels were generally accurate, depicting the highly technical aspects of the job, as well as an increase in supervisory responsibilities previously described in the DAFSC analysis.

TABLE 9

REPRESENTATIVE TASKS PERFORMED
BY DAFSC 2A654 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=582)
H179	Bond equipment	93
H203	Position maintenance stands	91
G141	Clean work areas	91
H193	Ground equipment	91
K325	Connect or disconnect B-nut-type fittings	90
H205	Purge fuel tanks or cells using blow purge method	89
H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	88
H192	Ground aircraft	88
K341	Remove or install boost pumps	88
H200	Perform fuel system preparation checklists	87
H187	Depuddle fuel tanks or cells	86
H199	Notify fire departments of fuel systems maintenance	86
H211	Rope off fuel system repair areas	85
H204	Pull circuit breakers	84
I246	Operationally check transfer systems	84
M429	Apply adhesion promoters prior to applying sealants	83
K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	82
H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	82
K373	Remove or install integral tank or fuel cell access doors	81
M448	Mix sealants by hand	80
I263	Perform red talcum powder tests	80
H194	Inspect aircraft for presence of chocks or moorings	79
H191	Drain fuel tanks or cells	79
H210	Review aircraft maintenance forms for deficiencies	79
H190	Don or doff respirators	79
I214	Evaluate and classify integral tank leaks	79
I223	Isolate malfunctions of crossfeed or engine-feed systems	78
I234	Localize fuel leak exits	78
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	77
H202	Position fire extinguishers	77

TABLE 10

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 2A634 AND DAFSC 2A654 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		2A634 (N=67)	2A654 (N=582)	DIFFERENCE
B51	Supervise Apprentice Aircraft Fuel Systems Mechanics	13	46	-33
B49	Supervise Aircraft Fuel Systems Mechanics (AFSC 45453)	4	35	-31
A11	Orient newly assigned personnel	7	34	-29
C72	Inspect or inventory composite tool kits (CTKs) or special tools	25	53	-28
I239	Operationally check ground defueling systems	39	65	-27
I233	Isolate malfunctions of vent systems	51	77	-26
I240	Operationally check ground refueling systems	46	72	-26
K340	Remove or install backing boards	16	42	-25
D87	Demonstrate how to locate technical information	12	37	-25
K389	Remove or install single-point aircraft refueling or defueling components	40	65	-25
C78	Write EPRs	3	27	-25
I223	Isolate malfunctions of crossfeed or engine-feed systems	54	78	-24
I219	Isolate malfunctions of air refueling systems of receiver	30	54	-24
K384	Remove or install pressure switches	45	69	-24
F118	Annotate or attach equipment status labels or tags, such as DD Forms 1574 (Serviceable Tag - Materiel)	43	67	-24

TABLE 11

REPRESENTATIVE TASKS PERFORMED BY DAFSC 2A674 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=496)
C78	Write EPRs	80
H203	Position maintenance stands	80
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	79
B49	Supervise Aircraft Fuel Systems Mechanics (AFSC 45453)	78
Q521	Access CAMS menus and data screens	78
H193	Ground equipment	78
H179	Bond equipment	77
H210	Review aircraft maintenance forms for deficiencies	75
H192	Ground aircraft	74
H200	Perform fuel system preparation checklists	74
H199	Notify fire departments of fuel systems maintenance	74
H205	Purge fuel tanks or cells using blow purge method	74
Q543	Open or close CAMS	73
F118	Annotate or attach equipment status labels or tags, such as DD Forms 1574 (Serviceable Tag - Materiel)	73
A3	Attend briefings	73
H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	73
B24	Counsel personnel on personal or military-related matters	73
J289	Inspect installed engine-feed system components	73
C73	Inspect work areas	73
A6	Determine work priorities	73
K325	Connect or disconnect B-nut-type fittings	72
I216	Interpret aircraft fuel system schematics	71
J321	Perform in-process inspections (IPIs)	71
H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	71
I246	Operationally check transfer systems	71
G141	Clean work areas	70
H194	Inspect aircraft for presence of chocks or moorings	70
I214	Evaluate and classify integral tank leaks	70
B36	Direct shop housekeeping	70
I223	Isolate malfunctions of crossfeed or engine-feed systems	70

TABLE 12

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 2A654 AND DAFSC 2A674 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASKS		2A654 (N=582)	2A674 (N=496)	DIFFERENCE
J321	Perform in-process inspections (IPIs)	20	71	-51
B24	Counsel personnel on personal or military-related matters	25	73	-48
A6	Determine work priorities	26	73	-47
B50	Supervise Aircraft Fuel Systems Technicians (AFSC 45473)	10	54	-44
B49	Supervise Aircraft Fuel Systems Mechanics (AFSC 45453)	35	78	-43
A15	Plan or schedule shifts or work assignments	14	56	-42
C61	Evaluate personnel for promotion, demotion, reclassification, or special awards	9	46	-37
B36	Direct shop housekeeping	34	70	-36
B28	Direct fuel system dock maintenance	32	67	-35
B21	Advise subordinates on supply problems	15	50	-35

TRAINING ANALYSIS

Occupational survey data are sources of information which can be used to assist in the development of relevant training programs for entry-level personnel. Factors used to evaluate entry-level Aircraft Fuel Systems Maintenance training include jobs performed by first-enlistment (1-48 months TAFMS) personnel, overall distribution of first-enlistment personnel across career ladder jobs, percent first-enlistment members performing specific tasks or using specific equipment items, ratings of how much TE tasks should receive in formal training, and ratings of relative TD.

First-Enlistment Personnel

The survey data captured the responses of 236 first-enlistment personnel, representing 21 percent of the survey sample. Figure 2 shows how first-enlistment personnel break out by job group. As displayed in Table 13, approximately 87 percent of their duty time is devoted to technical task performance, the majority of which is contained in four duties: Performing Supply Functions (11 percent), Preparing Aircraft for Fuel Systems Maintenance (20 percent), Troubleshooting Aircraft Fuel Systems (17 percent), and Removing and Installing Fuel Systems Components (17 percent). Table 14 displays some of the tasks performed by first-enlistment personnel.

Tables 15, 16, and 17 show different types of equipment used by first-enlistment personnel. Frequently used tools include air compressors, breathing kits, gas alarms, and pressure gauges. First-enlistment personnel were present in only three of the specialty job groups identified in this report, which are the Aircraft Preparation job, Fuel Systems Maintenance job, and the External Fuel Tank job.

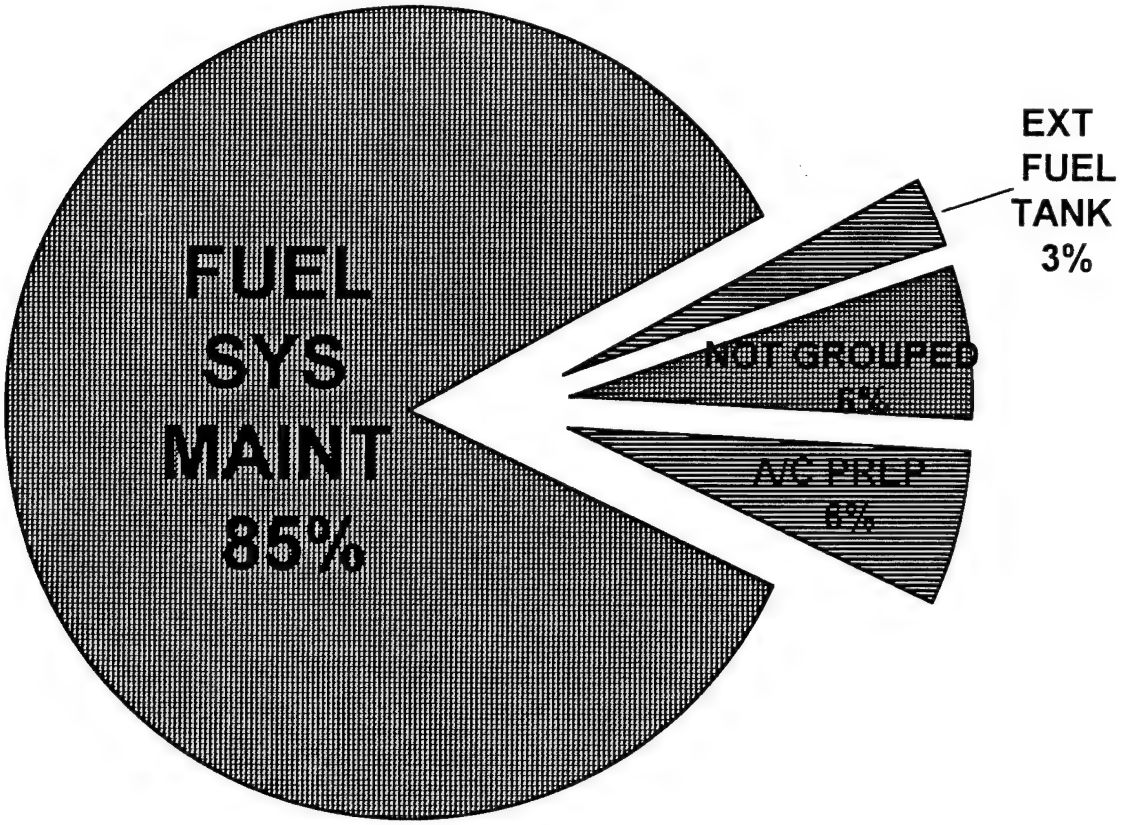


Figure 2

TE and TD Data

TE and TD data are secondary factors that can help technical school personnel decide which entry-level training tasks to emphasize. These ratings, based on the judgments of senior career ladder NCOs at operational units, provide training personnel with a rank-ordering of those tasks considered important for first-enlistment training (TE), and a measure of the difficulty of those tasks (TD). When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors (TE and TD), accompanied by moderate to high percentages of performance, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages of performance, may be more appropriately planned for OJT. Low task factor ratings may highlight tasks which should be omitted from entry-level training; however, this decision must be weighed against percentages of personnel performing tasks, command concerns, and criticality of tasks.

To help training personnel focus on tasks which are most appropriate for entry-level training, an additional factor, the Automated Training Indicator (ATI), was assigned to each task in the inventory. A computer program considered percent first-enlistment members performing, TE and TD ratings, and the Course Training Decision Table found in AETCR 52-22, Atch 1, to assign the

TABLE 13

RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES BY FIRST-ENLISTMENT AFSC 2A6X4 PERSONNEL

DUTIES	PERCENT TIME SPENT
ORGANIZING AND PLANNING	*
DIRECTING AND IMPLEMENTING	1
INSPECTING AND EVALUATING	1
TRAINING	*
PERFORMING ADMINISTRATIVE FUNCTIONS	*
PERFORMING SUPPLY FUNCTIONS	2
PERFORMING SUPPORT FUNCTIONS	11
PREPARING AIRCRAFT FOR FUEL SYSTEMS MAINTENANCE	20
TROUBLESHOOTING AIRCRAFT FUEL SYSTEMS	17
INSPECTING AIRCRAFT FUEL SYSTEMS	9
REMOVING AND INSTALLING FUEL SYSTEMS COMPONENTS	17
REPAIRING AIRCRAFT FUEL SYSTEMS COMPONENTS	3
REPAIRING INTEGRAL FUEL TANKS	8
PERFORMING GENERAL WATER INJECTION SYSTEMS FUNCTIONS	*
PERFORMING CROSS UTILIZATION TRAINING (CUT) DUTIES	1
PERFORMING MOBILITY TASKS	1
PERFORMING CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) FUNCTIONS	5

* Denotes less than 1 percent

NOTE: Numbers do not add to 100 due to rounding

TABLE 14

REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT
AFSC 2A6X4 PERSONNEL

TASKS		PERCENT MEMBERS PERFORMING (N=236)
G141	Clean work areas	95
H179	Bond equipment	95
H193	Ground equipment	95
H203	Position maintenance stands	95
H192	Ground aircraft	89
H200	Perform fuel system preparation checklists	89
H205	Purge fuel tanks or cells using blow purge method	89
H211	Rope off fuel system repair areas	89
K341	Remove or install boost pumps	89
K325	Connect or disconnect B-nut-type fittings	87
H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	86
H199	Notify fire department of fuel systems maintenance	86
H187	Depuddle fuel tanks or cells	86
K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	85
K373	Remove or install integral tank or fuel cell access doors	83
H204	Pull circuit breakers	82
M429	Apply adhesion promoters prior to applying sealants	81
I263	Perform red talcum powder tests	80
H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	79
H210	Review aircraft maintenance forms for deficiencies	79
H191	Drain fuel tanks or cells	78
I234	Localize fuel leak exits	78
H194	Inspect aircraft for presence of chocks or moorings	77
H201	Position drip pans	76
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	72
H190	Don or doff respirators	71
H195	Inspect aircraft for safety pin installation	70
H208	Remove or install closure panels	67
G158	Operate maintenance dispatch vehicles	63
H180	Check aircraft for explosives	63

TABLE 15

NONEXPLOSION-PROOF AGE USED BY MORE THAN 10 PERCENT OF FIRST-ENLISTMENT PERSONNEL

EQUIPMENT	PERCENT MEMBERS RESPONDING
Air Compressors	73
Generator Power Units	73
Light Carts	62
Heaters for Tanks/Cells	54
MC-7 Diesel Compressors	47
Air Conditioners	34
Hydraulic Mules	20
Bomb Lifts, such as MJ-1A or MJ-4	11
Goose Neck Stands	10

TABLE 16

EXPLOSION-PROOF AGE USED BY MORE THAN 10 PERCENT OF FIRST-ENLISTMENT PERSONNEL

EQUIPMENT	PERCENT MEMBERS RESPONDING
Maintenance Stands, such as B-4A Stands	82
Vacuum Cleaners	82
HDU-13M Heater Blowers	72
Rhine Air Low-Pressure Breathing Kits	59
Ambient Air Breathing Pumps	56
Pneumatic-Powered Fans, such as Rhine	56
MA-1 Blowers	53
Drain Barrels	28
Fuel Dump Barrels	28
Air Purifying Carts	26
Plenum Chambers	13
Blower Filters	11
Inert Gas Carts	11

TABLE 17

TEST EQUIPMENT USED BY MORE THAN 10 PERCENT
OF FIRST-ENLISTMENT PERSONNEL

EQUIPMENT	PERCENT MEMBERS RESPONDING
Combustible Gas Alarms	77
Pressure Gauges	76
Combustible and Toxic Gas Indicators	75
Multimeters	73
Combustible Gas Indicators	68
In-Flight Refueling (IFR) Receptacle Testers	67
Water Manometers	67
Pressurization and Vent Systems Test Kits	59
Leak Tracing Devices	55
Oxygen Analyzers	51
Modified Filler Caps	39
Tank Pressure Testers, Cap Assembly	36
Bonding Meters	31
External Tank Pressure Test Adapter Assemblies	30
Pressure Boxes	30
Fuel Boost Pump Pressure Testers	27
Hydrazine Drager Atmosphere Analyzers	26
Hydrazine Tank Pressure Test Adapters	14
Tensiometers	14
Fuel Inerting Test Kits	13
External Tank Pre-Installation Testers	12
Ultrasonic Tone Leak Detectors	11

value to each task corresponding to the 18 training decisions on the table. The decision table and explanation of ATIs preceded the listing of tasks in descending order of ATI in the Training Extract. Training personnel should focus on tasks with an ATI of 18, which suggests these tasks should be in the entry-level course.

Tasks having the highest TE ratings are listed in Table 18. Included for each task are the percentage of first-job and first-enlistment personnel performing and TD rating. As illustrated in the table, most of these tasks relate to common, technical maintenance. Furthermore, many of them have high percent members performing, as well as high TD ratings.

Table 19 lists the tasks having the highest TD ratings. The percentage of first-job, first-enlistment, 5-, and 7-skill level personnel performing, and TE ratings are also included. These tasks are primarily complex, technical functions and some are supervisory and management. Many of the tasks exhibit low TE and are performed by relatively low percentages of 5- and 7-skill level members.

Various lists of tasks, accompanied by TE and TD ratings, are contained in the Training Extract package and should be reviewed in detail by technical school personnel. For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the **SURVEY METHODOLOGY** section of this report.

Specialty Training Standard (STS)

Technical school personnel from the Sheppard Training Center matched JI tasks to sections and subsections of the Aircraft Fuel Systems STS. A listing of the STS was then produced, showing tasks matched, percent members performing the tasks, and TE and TD ratings and ATI for each task. These listings are included in the Training Extract. Any element with matched tasks performed by 20 percent or more of members from at least one of the career ladder job groups is considered to be supported and should be part of the STS.

Paragraphs 1 through 5, 23, and 24 deal with general topics of safety, supervision, training, technical publications, maintenance management, and general equipment usage. Because these paragraphs deal with general topics, they were not reviewed. Paragraphs 6 through 22 cover the common aspects of the career ladder. These paragraphs include 93 individual entries, 68 of which have tasks matched.

Using standard AETC criteria and percentages of first-job, first-enlistment, 5-, and 7-skill level 2A6X4 members performing matched tasks, all STS entries with matched items are well supported by the OSR data. Many technical tasks performed by more than 20 percent of at least one job group are not matched to STS elements (see Table 20), many of which have ATIs indicating resident training is warranted. Training personnel should review the list of unmatched tasks presented in the Training Extract to ensure the STS is complete.

TABLE 18

EXAMPLES OF TASKS WITH HIGHEST TRAINING EMPHASIS RATINGS

TASKS		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	PERCENT MEMBERS PERFORMING 1ST ENL	TSK DIFF
H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	7.03	85	87	4.07
I216	Interpret aircraft fuel system schematics	6.90	62	72	5.95
H205	Purge fuel tanks or cells using blow purge method	6.85	86	89	3.78
H193	Ground equipment	6.51	92	95	2.53
H200	Perform fuel system preparation checklists	6.46	87	89	3.82
M433	Apply fillet seals, such as first coat, by hand	6.38	63	69	4.81
G174	Serve as safety observer for tank entry personnel	6.38	62	68	3.73
H206	Purge fuel tanks or cells using exhaust purge method	6.26	65	66	3.84
H192	Ground aircraft	6.26	85	89	2.55
H179	Bond equipment	6.21	97	95	2.93
Q530	Clear or close out completed aircraft maintenance discrepancies in CAMS	6.15	54	61	4.69
H210	Review aircraft maintenance forms for deficiencies	6.13	74	79	4.50
I251	Perform leak path analyses on integral tanks	6.05	56	63	6.19
H190	Don or doff respirators	5.97	68	71	3.25
M435	Clean damaged sealant areas	5.95	75	76	4.83
H187	Depuddle fuel tanks or cells	5.95	81	86	4.00
Q521	Access CAMS menus and data screens	5.92	69	70	4.54
G143	Contain fuel spills	5.92	52	58	4.82
H195	Inspect aircraft for safety pin installation	5.87	67	70	2.94
I214	Evaluate and classify integral tank leaks	5.87	67	71	5.01
M429	Apply adhesion promoters prior to applying sealants	5.85	77	81	3.70
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	5.85	67	72	3.29
M431	Apply faying surface seals	5.79	48	56	4.85
M436	Clean integral tanks	5.74	53	65	4.62
I263	Perform red talcum powder tests	5.69	74	80	4.11
Q543	Open or close CAMS	5.62	62	65	3.40
H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	5.56	72	79	4.23
M440	Inject curing or noncuring sealants with high-pressure injection guns	5.56	43	48	5.12
M432	Apply fillet seals with guns	5.54	44	49	5.05
J286	Inspect fuel cells	5.51	53	54	5.96
K331	Fold cells for installation	5.46	70	71	4.93
H211	Rope off fuel system repair areas	5.46	88	89	2.33

TABLE 19

SAMPLE TASKS WITH HIGHEST TASK DIFFICULTY

TASKS		TSK DIFF	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL	5-LVL	7-LVL	TNG EMP
A7	Draft budget requirements	7.74	3	3	4	15	.51
O475	Operate aircraft engines	7.70	1	1	1	1	.77
A8	Establish or update organization policies, operating instructions (OIs), or standard operating procedures (SOPs)	7.58	3	3	6	34	.97
O488	Remove or replace aircraft engines	7.31	2	3	3	2	.36
C55	Evaluate budget requirements	7.14	2	1	2	10	.69
B27	Direct engineering change proposals (ECPs)	6.96	3	2	2	9	.33
C79	Write staff studies, surveys, or inspection reports, other than training reports	6.89	2	2	2	13	.69
K358	Remove or install fuel cells	6.87	72	72	71	60	5.18
L412	Repair boost pumps	6.86	4	3	2	3	1.69
O489	Remove or replace wind screens or canopies	6.82	2	1	1	0	.23
G146	Direct hydrazine spill clean-up procedures	6.79	4	6	12	24	3.26
O470	Isolate malfunctions on fuel quantity indicating system components	6.73	9	12	13	13	1.41
B25	Develop or improve work methods or procedures	6.64	9	15	29	58	2.15
O469	Isolate malfunctions on aircraft electrical systems components using multimeters	6.64	1	6	10	13	1.95
I217	Isolate electrical malfunctions using multimeters	6.63	28	33	37	37	4.74
A10	Establish production controls	6.62	3	3	6	28	1.15
L405	Refuel or defuel hydrazine fuel tanks	6.61	10	13	16	15	2.97
L411	Repair aircraft wiring segments associated with fuel systems components	6.61	5	6	9	6	2.03
L402	Patch bladder fuel cells	6.60	29	27	23	27	5.41
C74	Investigate mishaps	6.60	3	2	3	16	1.08
C77	Write civilian performance appraisals or supervisory appraisals	6.58	2	1	2	7	.82
K362	Remove or install fuel hydraulic radiators or fuel oil heat exchangers	6.57	29	35	36	28	2.41
L413	Repair butterfly-type shutoff valves	6.57	8	7	7	4	1.77
D83	Conduct resident course classroom instruction	6.56	4	4	5	8	.49
D90	Develop lesson plans	6.56	2	1	4	19	1.18
I224	Isolate malfunctions of external jettisonable fuel tanks	6.53	38	39	40	34	3.69
D89	Develop course curricula or plans of instruction (POIs)	6.53	3	2	4	16	1.18
I230	Isolate malfunctions of pressurization systems	6.50	41	52	55	48	4.54
A14	Plan or prepare briefings	6.48	3	3	9	35	.92
B35	Direct production line maintenance, such as external jettisonable fuel tank buildup	6.47	5	4	8	18	1.92
K368	Remove or install fuel system components for wing removal or installation	6.45	19	20	24	19	2.15
B52	Supervise civilians	6.45	2	2	7	16	1.13
G144	Contain hydrazine spills	6.45	19	22	26	24	3.92

TABLE 20

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 20 PERCENT OR MORE
AFSC 2A6X4 JOB MEMBERS AND NOT REFERENCED TO THE STS

TASKS		TNG EMP	PERCENT MEMBERS PERFORMING 1ST JOB	1ST ENL	5-LVL	7-LVL	TSK DIF
G143	Contain fuel spills	5.92	52	58	60	46	4.82
H186	Defuel fuel tanks or cells by transferring fuels	4.46	53	65	65	54	4.92
K334	Perform bonding checks on aircraft components	4.44	53	53	50	38	4.83
K376	Remove or install internally mounted fuel quantity probes	4.10	73	72	68	57	4.91
M444	Make temporary repairs using epoxy tabs	4.79	49	53	57	47	4.06
I228	Isolate malfunctions of jettison or dump systems	3.38	44	52	54	45	6.12
K356	Remove or install float switches	3.64	46	50	48	37	4.81
K384	Remove or install pressure switches	2.95	51	64	69	54	4.47
C72	Inspect or inventory composite tool kits (CTKs) or special tools	3.49	27	38	53	68	4.39
C73	Inspect work areas	3.26	29	39	49	73	4.45
F127	Inventory bench stocks, equipment, special tools, or supplies	3.46	34	37	43	47	4.78
I242	Operationally check jettison or dump systems	3.41	39	48	52	44	5.51
I260	Perform pressure tests on installed fuel cells	3.67	33	36	35	32	5.81

TE MEAN = 2.51; S.D. = 1.55 (HIGH = 4.06)
TD MEAN = 5.00; S.D. = 1.00

Plan of Instruction (POI)

JI tasks were matched by technical school instructors to related learning objectives in POI 3ABR45433, dated January 1991. The method employed was similar to that of the STS analysis. The data examined included percent members performing data by job for first-enlistment (1-48 months TAFMS) personnel, as well as TE, TD, and ATI.

POI blocks, units of instruction, and learning objectives were compared to the standards set forth in Attachment 1, AETCR 52-22, dated 17 February 1989 (30 percent or more of the criterion first-enlistment group members performing tasks). By this guidance, learning objectives in the course which do not meet these criteria should be considered for elimination from the formal course, if not justified on some other acceptable basis.

Review of the tasks matched to the POI reveals that all of the 34 matched learning objectives are supported by OSR data. Many technical tasks performed by more than 30 percent of at least one first-enlistment job group, however, are not matched to POI objectives (see Table 21). Many of these tasks exhibit ATIs warranting resident training. Training personnel should review the list of tasks, not referenced to the J3ABR45731 POI, presented in the Training Extract, for possible course inclusion determinations.

JOB SATISFACTION ANALYSIS

An examination of job satisfaction indicators can give career ladder managers a better understanding of factors that may affect job performance of career ladder airmen. Therefore, the survey booklet included questions covering job interest, perceived utilization of talents and training, sense of accomplishment from work, and reenlistment intentions. The responses of the current survey sample were then analyzed by making several comparisons: (1) among AFSC 2A6X4 TAFMS groups and a comparative sample of personnel from other Mission Equipment Maintenance career ladders surveyed in 1993 (AFSCs 2E2X1, 2A1X2, 2A6X3, 2E7X1, 2E1X3, 2A6X5, 2A1X4, 2A1X3, 2A4X2, 2A7X1, 2M0X2A, 2M0X1B, and 2A7X3), (2) between current and previous survey TAFMS groups, and (3) across specialty groups identified in the **SPECIALTY JOBS** section of this report.

Table 22 compares first-enlistment (1-48 months TAFMS), second-enlistment (49-96 months TAFMS), and career (97+ months TAFMS) group data to corresponding enlistment groups from other Mission Equipment Maintenance AFSCs surveyed during the previous calendar year. These data give a relative measure of how the job satisfaction of AFSC 2A6X4 personnel compares with similar Air Force specialties. Aircraft Fuel Systems Maintenance personnel reported similar job satisfaction to members of the comparative sample, but showed a higher perceived use of training. All other factors, across all TAFMS groups, show no major differences, which indicates that these personnel fall well within the normal range of job satisfaction for all maintenance career fields.

TABLE 21

EXAMPLES OF TECHNICAL TASKS PERFORMED BY 30 PERCENT OR MORE
AFSC 2A6X4 FIRST-ENLISTMENT JOB MEMBERS AND NOT REFERENCED TO THE POI

TASKS		TNG EMP	PERCENT MEMBERS PERFORMING ATI	1ST JOB	1ST ENL	TSK DIF
O132	Contain fuel spills	5.92	18	52	58	4.82
G165	Prepare cells for storage or shipment	4.36	18	56	59	4.37
H186	Defuel fuel tanks or cells by transferring fuels	4.46	18	53	65	4.92
I221	Isolate malfunctions of aircraft defueling systems	4.77	18	48	53	5.87
I223	Isolate malfunctions of crossfeed or engine-feed systems	5.05	18	67	72	6.31
I234	Localize fuel leak exits	5.46	18	68	78	5.17
I252	Perform manifold fitting leak tests	4.41	18	46	51	4.85
G174	Perform manifold leak tests	4.31	18	49	54	4.87
J299	Inspect integral tanks	4.54	18	43	51	5.84
K334	Perform bonding checks on aircraft components	4.44	18	53	53	4.83
K374	Remove or install internally mounted electrical pumps, other internal electrical quick disconnect pumps	4.23	18	49	50	5.03
K376	Remove or install internally mounted fuel quantity probes	4.10	18	73	72	4.91
M444	Make temporary repairs using epoxy tabs	4.79	18	49	53	4.06

TE MEAN = 2.51; S.D. = 1.55 (HIGH = 4.06)
TD MEAN = 5.00; S.D. = 1.00

TABLE 22

COMPARISON OF JOB SATISFACTION INDICATORS FOR AFSC 2A6X4 TAFMS GROUPS
IN CURRENT STUDY TO A COMPARATIVE SAMPLE
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	CURRENT (N=236)	SAMPLE (N=4,657)	CURRENT (N=294)	SAMPLE (N=3,813)	CURRENT (N=615)	SAMPLE (N=8,073)
EXPRESSED JOB INTEREST:						
INTERESTING	71	79	72	75	71	77
SO-SO	15	13	22	15	20	14
DULL	14	8	6	10	8	9
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO EXCELLENT	82	84	84	81	86	82
LITTLE OR NOT AT ALL	17	16	15	19	14	18
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO EXCELLENT	96	86	93	79	90	77
LITTLE OR NOT AT ALL	5	14	6	20	10	23
SENSE OF ACCOMPLISHMENT:						
SATISFIED	78	79	79	73	75	73
NEUTRAL	10	11	12	10	11	10
DISSATISFIED	10	10	9	16	14	17
REENLISTMENT INTENTIONS:						
PLAN TO REENLIST	71	64	81	74	79	73
PLAN NOT TO REENLIST	29	36	18	25	7	9
PLAN TO RETIRE	0	0	0	0	14	17

NOTE: Comparative data are from 13 Mission Equipment Maintenance AFSCs surveyed in 1993

An indication of changes in job satisfaction perceptions within the career ladder is provided in Table 23, which presents TAFMS group data for 1993 respondents, and data from respondents to the last OSR. Generally, perceptions associated with job satisfaction have remained the same for all TAFMS groups.

Table 24 presents job satisfaction data for the major jobs identified in the career ladder structure. An examination of these data can reveal the influences of performing certain jobs on overall job satisfaction. All of the job groups find their jobs interesting. Some of the identified jobs with very small populations (CAMS, CUT, and Mobility) show some differences, but they have little influence over the job satisfaction as a whole.

Summary

Overall, AFSC 2A6X4 respondents are satisfied with their jobs. When compared to other mission equipment maintenance specialties surveyed in 1993, AFSC 2A6X4 personnel show relatively similar job satisfaction, but show significantly higher perceived use of training, particularly within the 49-96 months and 97+ months TAFMS groups. When compared to the 1985 (AFSC 423X3) OSR, there has been no significant change in job satisfaction. A comparison of major jobs identified in the current sample reveals that there is little difference in job satisfaction indicators across job groups.

IMPLICATIONS

The Aircraft Fuel Systems Maintenance (AFSC 2A6X4) career ladder has not changed much since the last survey in 1985. The jobs still involve roughly the same balance of technical maintenance and support functions. The advancement of CAMS technology has added new responsibilities centering around CAMS-related functions.

Career ladder progression is typical, with 3- and 5-skill level technicians primarily performing technical functions. The 7-skill level personnel, due to the technical nature of the career ladder, also perform many technical functions, along with supervisory duties.

The *AFMAN 36-2108 Specialty Descriptions* are accurate and the technical training program is sound, as both the STS and POI are **well** supported by survey data. Job satisfaction data show that members of the career ladder are generally very satisfied with their jobs. This career ladder is very stable, and no changes are forecast as of this writing.

TABLE 23

COMPARISON OF AFSC 2A6X4 JOB SATISFACTION INDICATORS
FOR CURRENT AND PREVIOUS SURVEY
(PERCENT MEMBERS RESPONDING)

	1-48 MOS TAFMS		49-96 MOS TAFMS		97+ MOS TAFMS	
	CURRENT (N=236)	1985 (N=815)	CURRENT (N=294)	1985 (N=443)	CURRENT (N=615)	1985 (N=446)
EXPRESSED JOB INTEREST:						
INTERESTING	71	67	72	71	71	76
SO-SO	15	21	22	10	20	14
DULL	14	12	6	10	8	10
PERCEIVED USE OF TALENTS:						
FAIRLY WELL TO EXCELLENT	82	78	84	81	86	85
LITTLE OR NOT AT ALL	17	22	15	19	14	15
PERCEIVED USE OF TRAINING:						
FAIRLY WELL TO EXCELLENT	96	89	93	85	90	88
LITTLE OR NOT AT ALL	5	11	6	15	10	12
SENSE OF ACCOMPLISHMENT:						
SATISFIED	78	*	79	*	75	*
NEUTRAL	10	*	12	*	11	*
DISSATISFIED	10	*	9	*	14	*
REENLISTMENT INTENTIONS:						
PLAN TO REENLIST	71	67	81	77	79	79
PLAN NOT TO REENLIST	29	33	18	23	7	7
PLAN TO RETIRE	0	0	0	8	14	14

* Data not available

TABLE 24

COMPARISON OF JOB SATISFACTION INDICATORS FOR MEMBERS OF AFSC 2A6X4 SPECIALTY JOBS
(PERCENT MEMBERS RESPONDING)

	ACFT PREP (N=36)	FUEL SYS MAINT (N=874)	EXT FUEL TANK (N=26)	SHOP/ SHIFT CHIEF (N= 65)	CUT (N=5)	INST (N=13)	MOB (N=26)	SUPERVISOR CLUSTER TRNRS (N=6)	SUPERVISOR CLUSTER SUP (N=19)	CAMS (N=6)
EXPRESSED JOB INTEREST:										
INTERESTING	78	72	73	77	80	77	83	100	74	67
SO-SO	19	19	15	20	20	15	0	0	16	33
DULL	3	9	12	3	0	8	17	0	11	0
PERCEIVED USE OF TALENTS:										
FAIRLY WELL TO EXCELLENT	78	86	85	88	40	92	83	100	63	100
LITTLE OR NOT AT ALL	22	14	15	12	60	8	17	0	37	0
PERCEIVED USE OF TRAINING:										
FAIRLY WELL TO EXCELLENT	94	94	85	95	20	85	67	100	74	100
LITTLE OR NOT AT ALL	6	6	15	5	80	15	33	0	26	0
SENSE OF ACCOMPLISHMENT:										
SATISFIED	78	78	77	77	100	92	67	100	74	67
NEUTRAL	11	11	8	11	0	8	0	0	16	17
DISSATISFIED	11	11	15	12	0	0	33	0	10	17
REENLISTMENT INTENTIONS:										
PLAN TO REENLIST	83	79	81	71	100	100	33	67	68	67
PLAN NOT TO REENLIST	14	15	19	8	0	0	17	0	5	33
PLAN TO RETIRE	3	6	0	22	0	0	50	33	21	0

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APPENDIX A

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GENERAL PREP
(ST67, N=39)

TASK STATEMENT		PERCENT MEMBERS PERFORMING
H193	Ground equipment	94
H179	Bond equipment	94
H203	Position maintenance stands	94
H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	94
H205	Purge fuel tanks or cells using blow purge method	88
H211	Rope off fuel system repair areas	88
H192	Ground aircraft	83
H187	Depuddle fuel tanks or cells	80
K341	Remove or install boost pumps	80
G141	Clean work areas	77
H200	Perform fuel system preparation checklists	75
K325	Connect or disconnect B-nut-type fittings	75
H194	Inspect aircraft for presence of chocks or moorings	69
H195	Inspect aircraft for safety pin installation	69
H190	Don or doff respirators	69
H199	Notify fire departments of fuel systems maintenance	69
M429	Apply adhesion promoters prior to applying sealants	69
H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	66
H191	Drain fuel tanks or cells	66
K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	66
G164	Position powered or nonpowered AGE to aircraft	63
K373	Remove or install integral tank or fuel cell access doors	61
M448	Mix sealants by hand	61
H180	Check aircraft for explosives	58
H201	Position drip pans	58
H210	Review aircraft maintenance forms for deficiencies	58
H206	Purge fuel tanks or cells using exhaust purge method	55
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	55
K358	Remove or install fuel cells	55
H208	Remove or install closure panels	52

FUEL SYSTEMS MAINTENANCE
(ST63, N=874)

TASK STATEMENT		PERCENT MEMBERS PERFORMING
H203	Position maintenance stands	98
H179	Bond equipment	96
H193	Ground equipment	96
H205	Purge fuel tanks or cells using blow purge method	96
H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions	94
H200	Perform fuel system preparation checklists	94
H199	Notify fire departments of fuel systems maintenance	93
K325	Connect or disconnect B-nut-type fittings	93
K341	Remove or install boost pumps	93
H192	Ground aircraft	92
H187	Depuddle fuel tanks or cells	92
I246	Operationally check transfer systems	91
G141	Clean work areas	91
H204	Pull circuit breakers	90
H211	Rope off fuel system repair areas	90
M429	Apply adhesion promoters prior to applying sealants	88
H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	88
K373	Remove or install integral tank or fuel cell access doors	87
I263	Perform red talcum powder tests	87
I214	Evaluate and classify integral tank leaks	87
H210	Review aircraft maintenance forms for deficiencies	86
I223	Isolate malfunctions of crossfeed or engine-feed systems	86
K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	86
I233	Isolate malfunctions of vent systems	86
I234	Localize fuel leak exits	85
M448	Mix sealants by hand	85
H194	Inspect aircraft for presence of chocks or moorings	85
H191	Drain fuel tanks or cells	85
I216	Interpret aircraft fuel system schematics	85
I237	Operationally check engine-feed systems	84

EXTERNAL FUEL TANKS
(GP34, N=26)

TASK STATEMENT		PERCENT MEMBERS PERFORMING
G141	Clean work areas	100
K347	Remove or install external jettisonable fuel tank components	84
G166	Prepare external jettisonable fuel tanks for tank farms	84
G137	Clean external fuel tanks	84
G151	Maintain external fuel tank storage areas (tank farms)	80
J282	Inspect external jettisonable fuel tank components	80
G134	Assemble external jettisonable fuel tanks from nested containers or canisters	80
J322	Perform pressure checks on external jettisonable fuel tanks	76
I267	Perform transfer checks on external jettisonable fuel tanks	76
K348	Remove or install external tank nosecones or tailcones	76
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	76
F118	Annotate or attach equipment status labels or tags, such as DD Forms 1574 (Serviceable Tag - Materiel)	76
G167	Prepare external jettisonable fuel tanks for WRM storage	73
G150	Issue or receive external fuel tanks	73
J283	Inspect external jettisonable fuel tanks	73
H179	Bond equipment	73
G140	Clean test equipment	73
K325	Connect or disconnect B-nut-type fittings	73
G139	Clean or lubricate handtools or special tools	73
G173	Repair or service WRM external jettisonable fuel tank nested containers	69
H193	Ground equipment	69
G148	Fabricate ground wires	69
I224	Isolate malfunctions of external jettisonable fuel tanks	65
J318	Inspect WRM built-up stored external tanks	65
C72	Inspect or inventory composite tool kits (CTKs) or special tools	65
A3	Attend briefings	65
K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	61
G160	Paint equipment or facilities	61
G143	Contain fuel spills	61

SHOP/SHIFT CHIEF
(ST75, N=65)

	TASK STATEMENT	PERCENT MEMBERS PERFORMING
C78	Write EPRs	98
B24	Counsel personnel on personal or military-related matters	96
C73	Inspect work areas	95
A6	Determine work priorities	93
A15	Plan or schedule shifts or work assignments	93
B36	Direct shop housekeeping	93
C76	Perform self-inspections	93
F118	Annotate or attach equipment status labels or tags, such as DD Forms 1574 (Serviceable Tag - Materiel)	92
A3	Attend briefings	90
B21	Advise subordinates on supply problems	90
C72	Inspect or inventory composite tool kits (CTKs) or special tools	89
B50	Supervise Aircraft Fuel Systems Technicians (AFSC 45473)	87
Q543	Open or close CAMS	87
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	87
B25	Develop or improve work methods or procedures	86
B43	Interpret policies, directives, or procedures	86
C61	Evaluate personnel for promotion, demotion, reclassification, or special awards	86
Q521	Access CAMS menus and data screens	84
B28	Direct fuel system dock maintenance	84
A11	Orient newly assigned personnel	84
B49	Supervise Aircraft Fuel Systems Mechanics (AFSC 45453)	83
A9	Establish performance standards for subordinates	83
B40	Implement safety or security programs or procedures	81
D87	Demonstrate how to locate technical information	81
B29	Direct fuel system flightline maintenance	80
E117	Type correspondence, records, or reports	80
B22	Conduct shop meetings	80
A18	Schedule leaves or passes	78
A1	Assign personnel to duty positions	78
D82	Conduct OJT	78

CUT
(ST124, N=5)

TASK STATEMENT		PERCENT MEMBERS PERFORMING
O472	Launch or recover aircraft	100
O482	Position or remove aircraft chocks	100
O473	Marshal aircraft	100
H197	Install aircraft safety pins	100
H192	Ground aircraft	100
H203	Position maintenance stands	100
H202	Position fire extinguishers	100
H194	Inspect aircraft for presence of chocks or moorings	100
O497	Walk wings or tails during aircraft towing operations	100
O495	Tow aircraft	100
H193	Ground equipment	100
H186	Defuel fuel tanks or cells by transferring fuels	100
I227	Isolate malfunctions of fuel transfer indicating systems	100
O481	Perform single-point aircraft refueling or defueling	80
H195	Inspect aircraft for safety pin installation	80
H204	Pull circuit breakers	80
G164	Position powered or nonpowered AGE to aircraft	80
O476	Operate aircraft internal electrical systems	80
O477	Perform engine inlet inspections	80
O496	Tow nonpowered AGE	80
H210	Review aircraft maintenance forms for deficiencies	80
O494	Service LOX bottles	80
O493	Service aircraft tires	80
H183	Check nitrogen levels on dewar quantity gauges	80
H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained	80
O485	Remove or install aircraft wheel assemblies	80
O492	Service aircraft struts	80
B53	Supervise personnel in career fields, other than AFSC 454X3	80
M446	Make temporary repairs using oylite	80
M444	Make temporary repairs using epoxy tabs	80

INSTRUCTORS
(ST20, N=13)

	TASK STATEMENT	PERCENT MEMBERS PERFORMING
D80	Administer or score tests	100
D83	Conduct resident course classroom instruction	92
D87	Demonstrate how to locate technical information	92
G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry	84
B24	Counsel personnel on personal or military-related matters	76
A3	Attend briefings	76
H193	Ground equipment	69
D96	Inspect or evaluate training aids or equipment	61
E111	Maintain publication libraries containing materials, such as regulations, manuals, or TO files	61
D86	Counsel resident course students on training progress	61
H192	Ground aircraft	61
D95	Evaluate progress of resident course students	53
G141	Clean work areas	53
M449	Mix sealants using machines	53
M432	Apply fillet seals with guns	53
M433	Apply fillet seals, such as first coat, by hand	53
M431	Apply faying surface seals	53
H179	Bond equipment	53
H194	Inspect aircraft for presence of chocks or moorings	53
B36	Direct shop housekeeping	46
D90	Develop lesson plans	46
M440	Inject curing or noncuring sealants with high-pressure injection guns	46
D89	Develop course curricula or plans of instruction (POIs)	46
M435	Clean damaged sealant areas	46
K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings	46
L402	Patch bladder fuel cells	46
H195	Inspect aircraft for safety pin installation	46
E116	Research TOs	46
D101	Procure training aids, space, or equipment	46
H197	Install aircraft safety pins	46

MOBILITY
(ST72, N=6)

TASK STATEMENT		PERCENT MEMBERS PERFORMING
P506	Inspect and prepare mobility containers or pallets	100
P507	Inspect mobility boxes	100
P505	Identify, sequence, and place mobility containers on pallets	100
P520	Weatherproof mobility containers on pallets	100
P502	Build mobility crates or pallets	83
P514	Prepare itemized listings for mobility containers	83
P515	Prepare required shipping documents or forms or reshipment documents or forms for mobility equipment	83
P500	Assemble mobility boxes	83
P499	Accomplish mobility processing checklists	83
B25	Develop or improve work methods or procedures	83
P504	Determine personnel or equipment requirements for mission deployments	83
P509	Pack individual mobility equipment for deployments	83
P513	Prepare hazardous cargo for shipment	66
P512	Place load lists or placards on mobility pallets	66
F122	Establish accountability procedures for equipment or supplies	66
P510	Participate in predeployment mobility briefings	66
P517	Secure mobility containers on pallets for air shipment	66
P503	Determine load lists or placards for mobility pallets	66
A5	Determine requirements for space or personnel	66
F125	Establish supply requirements	66
A3	Attend briefings	66
F132	Validate supply transaction listings, such as D04, D18, or M30	66
F131	Transport serviceable or reparable items to or from supply distribution points	66
E106	Annotate or update security logs	66
E117	Type correspondence, records, or reports	66
P508	Maintain security throughout flight phase of deployments	66
F121	Control equipment, parts, or supplies	50
P516	Secure mobility containers at mission locations	50
P501	Assemble or disassemble mockups or test stations for mission deployments	50
F129	Requisition supplies, equipment, bench stocks, or shop stocks	50

SUPERVISORS
(ST55, N=25)

TASK STATEMENT		PERCENT MEMBERS PERFORMING
A3	Attend briefings	96
C78	Write EPRs	92
B24	Counsel personnel on personal or military-related matters	92
A6	Determine work priorities	88
A11	Orient newly assigned personnel	88
A8	Establish or update organization policies, operating instructions (OIs), or standard operating procedures (SOPs)	84
B43	Interpret policies, directives, or procedures	84
B25	Develop or improve work methods or procedures	84
B45	Participate in staff meetings	80
E117	Type correspondence, records, or reports	76
B40	Implement safety or security programs or procedures	76
A9	Establish performance standards for subordinates	76
A14	Plan or prepare briefings	76
C76	Perform self-inspections	72
A1	Assign personnel to duty positions	72
B39	Draft correspondence	72
A15	Plan or schedule shifts or work assignments	72
B22	Conduct shop meetings	72
A18	Schedule leaves or passes	72
B36	Direct shop housekeeping	68
C73	Inspect work areas	64
C72	Inspect or inventory composite tool kits (CTKs) or special tools	64
E108	Maintain administrative files	64
C61	Evaluate personnel for promotion, demotion, reclassification, or special awards	64
B21	Advise subordinates on supply problems	60
A2	Assign sponsors for newly assigned personnel	60
A16	Plan section safety programs	56
B53	Supervise personnel in career fields, other than AFSC 454X3	52
A20	Serve as training advisor	52

CAMS
(ST86, N=6)

TASK STATEMENT		PERCENT MEMBERS PERFORMING
Q521	Access CAMS menus and data screens	100
Q550	Retrieve CAMS products	100
Q553	Verify accuracies of daily inputs in CAMS	100
Q543	Open or close CAMS	83
A6	Determine work priorities	83
Q544	Perform CAMS inquiries for aircraft maintenance discrepancies, such as scheduled, deferred, or unscheduled	83
Q546	Perform CAMS inquiries for uncompleted maintenance event listings	83
Q522	Analyze CAMS data	66
E117	Type correspondence, records, or reports	66
E109	Maintain daily production reports	50
Q523	Change CAMS errors noted during daily verification process	50
Q532	Conduct CAMS training	50
Q529	Clean CAMS equipment	50
B43	Interpret policies, directives, or procedures	50
A11	Orient newly assigned personnel	50
A17	Review emergency or contingency plans	50
A3	Attend briefings	50
A14	Plan or prepare briefings	50
B45	Participate in staff meetings	33
B44	Maintain emergency or contingency plans	33
B53	Supervise personnel in career fields, other than AFSC 454X3	33
Q527	Change CAMS workcenter event narratives	33
E107	Design worksheets or maintenance forms	33
Q538	Input aircraft or support equipment maintenance discrepancies in CAMS	33
Q526	Change CAMS work unit codes	33
Q547	Perform CAMS inquiries to monitor delayed discrepancies prior to, during, or after scheduling maintenance	33
B39	Draft correspondence	33
B24	Counsel personnel on personal or military-related matters	33
A10	Establish production controls	16
Q551	Schedule or reschedule aircraft maintenance discrepancies in CAMS	16

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APPENDIX B

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These Task Modules (TMs) were developed in order to organize and summarize the extensive task information for this specialty. The TMs were derived by statistical clustering of the tasks in terms of which tasks are performed by the same incumbents. For example, if an individual performs one documentation task, the probability is very high that he or she also will perform other documentation tasks. Thus, the group of documentation tasks can be considered a "natural group" of associated or related tasks (see TM 0001 below). The statistical clustering generally approximates these "natural groupings. "

The title of each TM is our best estimate as to the generic subject content of the group of tasks. The TMs are useful for organizing the task data into meaningful units and as a way to concisely summarize the extensive job data. However, TMs are only one way to organize the information. Other strategies may also be valid.

0001	Supervision	
1	A1	Assign personnel to duty positions
2	A6	Determine work priorities
3	A9	Establish performance standards for subordinates
4	A11	Orient newly assigned personnel
5	A15	Plan or schedule shifts or work assignments
6	B24	Counsel personnel on personal or military-related matters
7	B25	Develop or improve work methods or procedures
8	B28	Direct fuel system dock maintenance
9	B29	Direct fuel system flightline maintenance
10	B30	Direct fuel system repairs in isolated areas
11	B36	Direct shop housekeeping
12	B43	Interpret policies, directives, or procedures
13	B49	Supervise Aircraft Fuel Systems Mechanics (AFSC 45453)
14	B50	Supervise Aircraft Fuel Systems Technicians (AFSC 45473)
15	B51	Supervise Apprentice Aircraft Fuel Systems Mechanics (AFSC 45433)
16	C78	Write EPRs
17	D82	Conduct OJT
18	D87	Demonstrate how to locate technical information
19	J321	Perform in-process inspections (IPIs)

0002	OJT	
1	D85	Counsel OJT trainees on training progress
2	D94	Evaluate OJT trainees
3	D98	Monitor personnel enrolled in career development courses (CDCs)
4	D100	Plan, direct, or schedule OJT

0003	CAMS	
1	F130	Research core automated maintenance system (CAMS) or microfiche files for supply requisition data
2	Q522	Analyze CAMS data
3	Q523	Change CAMS errors noted during daily verification process
4	Q524	Change CAMS job standard narratives

0003	CAMS (Continued)	
5	Q525	Change CAMS performing workcenter codes
6	Q526	Change CAMS work unit codes
7	Q527	Change CAMS workcenter event narratives
8	Q529	Clean CAMS equipment
9	Q531	Complete work order closeouts
10	Q532	Conduct CAMS training
11	Q533	Defer maintenance discrepancies in CAMS
12	Q538	Input aircraft or support equipment maintenance discrepancies in CAMS
13	Q540	Input supply data in CAMS
14	Q545	Perform CAMS inquiries for training status
15	Q547	Perform CAMS inquiries to monitor delayed discrepancies prior to, during, or after scheduling maintenance
16	Q548	Perform CAMS interface with base supply systems
17	Q550	Retrieve CAMS products
18	Q551	Schedule or reschedule aircraft maintenance discrepancies in CAMS
19	Q553	Verify accuracies of daily inputs in CAMS

0004	Mobility	
1	P499	Accomplish mobility processing checklists
2	P500	Assemble mobility boxes
3	P501	Assemble or disassemble mockups or test stations for mission deployments
4	P502	Build mobility crates or pallets
5	P503	Determine load lists or placards for mobility pallets
6	P504	Determine personnel or equipment requirements for mission deployments
7	P505	Identify, sequence, and place mobility containers on pallets
8	P506	Inspect and prepare mobility containers or pallets
9	P507	Inspect mobility boxes
10	P508	Maintain security throughout flight phase of deployments
11	P509	Pack individual mobility equipment for deployments
12	P510	Participate in predeployment mobility briefings
13	P511	Perform cargo or classified courier duties
14	P512	Place load lists or placards on mobility pallets
15	P513	Prepare hazardous cargo for shipment
16	P514	Prepare itemized listings for mobility containers
17	P515	Prepare required shipping documents or forms or reshipment documents or forms for mobility equipment
18	P516	Secure mobility containers at mission locations
19	P517	Secure mobility containers on pallets for air shipment
20	P518	Store equipment at mission locations
21	P519	Unpack mobility containers at mission locations
22	P520	Weatherproof mobility containers on pallets

0005	Crew Chief	
1	H197	Install aircraft safety pins
2	O481	Perform single-point aircraft refueling or defueling
3	O482	Position or remove aircraft chocks
4	O496	Tow nonpowered AGE

0006	Scavenge Systems	
1	I229	Isolate malfunctions of manifold scavenge systems
2	I232	Isolate malfunctions of tank scavenge systems
3	I243	Operationally check manifold scavenge systems
4	I245	Operationally check tank scavenge systems
5	J293	Inspect installed manifold scavenge system components
6	J296	Inspect installed tank scavenge system components
7	J308	Inspect removed manifold scavenge system components
8	J311	Inspect removed tank scavenge system components

0007	External Fixed Fuel Tanks	
1	I225	Isolate malfunctions of external-fixed fuel tanks
2	I266	Perform transfer checks on external fixed fuel tanks
3	J280	Inspect external fixed fuel tank components
4	J281	Inspect external fixed fuel tanks
5	J323	Perform pressure checks on external-fixed fuel tanks
6	K349	Remove or install external-fixed fuel tank components

0008	APU	
1	I222	Isolate malfunctions of auxiliary power unit (APU) fuel supply systems
2	I236	Operationally check APU fuel supply systems
3	J277	Inspect APU fuel supply system components
4	K339	Remove or install APU fuel supply system components

0009	External Jettisonable Fuel Tanks	
1	A4	Coordinate transportation schedules of war reserve materiels (WRMs)
2	B35	Direct production line maintenance, such as external jettisonable fuel tank buildup
3	G134	Assemble external jettisonable fuel tanks from nested containers or canisters
4	G135	Build or repair crates for external fuel tanks
5	G137	Clean external fuel tanks
6	G150	Issue or receive external fuel tanks
7	G151	Maintain external fuel tank storage areas (tank farms)
8	G163	Police open storage areas
9	G166	Prepare external jettisonable fuel tanks for tank farms
10	G167	Prepare external jettisonable fuel tanks for WRM storage
11	G173	Repair or service WRM external jettisonable fuel tank nested containers

0009	External Jettisonable Fuel Tanks (Continued)	
12	I224	Isolate malfunctions of external jettisonable fuel tanks
13	I267	Perform transfer checks on external jettisonable fuel tanks
14	J282	Inspect external jettisonable fuel tank components
15	J283	Inspect external jettisonable fuel tanks
16	J318	Inspect WRM built-up stored external tanks
17	J319	Perform dash six inspections on jettisonable fuel tanks
18	J322	Perform pressure checks on external jettisonable fuel tanks
19	K347	Remove or install external jettisonable fuel tank components

0010	Hydrazine	
1	G133	Apply chlorine or bleach to neutralize hydrazine spills
2	G144	Contain hydrazine spills
3	G146	Direct hydrazine spill clean-up procedures
4	G147	Dispose of hydrazine-contaminated rags
5	G153	Maintain hydrazine detection equipment
6	G154	Maintain hydrazine protective gear or clothing
7	G155	Maintain hydrazine spill response trailers
8	G156	Maintain hydrazine storage facilities
9	G170	Purge emergency power unit (EPU) systems
10	G176	Test areas of hydrazine spills for neutralization
11	G177	Test hydrazine spill neutralized solutions for excess chlorine
12	J279	Inspect EPU components from nitrogen control valves to poppet valves
13	K371	Remove or install hydrazine burst disks
14	K372	Remove or install hydrazine fuel tanks
15	L405	Refuel or defuel hydrazine fuel tanks

0011	Valves	
1	L407	Remove or install check valve parts
2	L408	Remove or install drain valve parts
3	L409	Remove or install relief valve parts
4	L410	Remove or install solenoid valve parts
5	L418	Replace floats on float valves
6	L419	Test boost pumps
7	L420	Test butterfly-type shutoff valves
8	L421	Test centrifugal pump parts
9	L422	Test check valve parts
10	L428	Test sliding gate shutoff valves

0012	Technical Orders	
1	C67	Evaluate technical order (TO) changes
2	E111	Maintain publication libraries containing materials, such as regulations, manuals, or TO files
3	E115	Research microfiche files for technical data updates
4	E116	Research TOs

0013	Supply	
1	B21	Advise subordinates on supply problems
2	B47	Schedule equipment for calibration
3	E114	Prepare or maintain precision measurement equipment laboratory (PMEL) status charts or forms
4	F119	Annotate or review R26 due-in-from-maintenance (DIFM) listings
5	F121	Control equipment, parts, or supplies
6	F122	Establish accountability procedures for equipment or supplies
7	F123	Establish equipment or tool requirements
8	F125	Establish supply requirements
9	F126	Identify supply problems
10	F127	Inventory bench stocks, equipment, special tools, or supplies
11	F128	Monitor shop stock levels
12	F129	Requisition supplies, equipment, bench stocks, or shop stocks
13	F132	Validate supply transaction listings, such as D04, D18, or M30

0014	Management	
1	A2	Assign sponsors for newly assigned personnel
2	A3	Attend briefings
3	A5	Determine requirements for space or personnel
4	A7	Draft budget requirements
5	A8	Establish or update organization policies, operating instructions (OIs), or standard operating procedures (SOPs)
6	A10	Establish production controls
7	A12	Plan for emergency maintenance of equipment
8	A13	Plan layouts of facilities
9	A14	Plan or prepare briefings
10	A16	Plan section safety programs
11	A17	Review emergency or contingency plans
12	A18	Schedule leaves or passes
13	A19	Schedule personnel for temporary duty (TDY)
14	B22	Conduct shop meetings
15	B23	Conduct staff meetings
16	B26	Direct bench checks or repairs
17	B31	Direct maintenance of administrative files
18	B32	Direct maintenance of publication libraries
19	B33	Direct maintenance or utilization of test or repair equipment

0014	Management (Continued)	
20	B34	Direct preparation of unsatisfactory reports, such as materiel deficiency reports (MDRs)
21	B37	Direct time compliance technical order (TCTO) work
22	B39	Draft correspondence
23	B40	Implement safety or security programs or procedures
24	B41	Implement suggestion programs
25	B44	Maintain emergency or contingency plans
26	B45	Participate in staff meetings
27	B46	Perform shops scheduling
28	B48	Schedule personnel for industrial or occupational physicals
29	C54	Analyze workload requirements
30	C55	Evaluate budget requirements
31	C57	Evaluate emergency or contingency procedures
32	C58	Evaluate inspection reports or procedures
33	C59	Evaluate maintenance data collection information after processing
34	C60	Evaluate maintenance or use of workspace, equipment, or supplies
35	C61	Evaluate personnel for promotion, demotion, reclassification, or special awards
36	C62	Evaluate personnel for specialized training
37	C63	Evaluate procedures for storage, inventory, or inspection of property items
38	C64	Evaluate safety or security programs
39	C65	Evaluate storage procedures for oils, solvents, or gases
40	C66	Evaluate suggestions
41	C68	Evaluate use of respirators
42	C69	Evaluate work schedules
43	C71	Indorse enlisted performance reports (EPRs)
44	C75	Participate in field evaluations or surveys
45	C79	Write staff studies, surveys, or inspection reports, other than training reports
46	D81	Assign on-the-job training (OJT) trainers
47	D93	Evaluate OJT methods, techniques, or programs
48	E108	Maintain administrative files
49	E112	Maintain rosters
50	E117	Type correspondence, records, or reports

0015	Tech School Instructor	
1	D80	Administer or score tests
2	D83	Conduct resident course classroom instruction
3	D84	Conduct training conferences or briefings
4	D86	Counsel resident course students on training progress
5	D89	Develop course curricula or plans of instruction (POIs)
6	D90	Develop lesson plans
7	D92	Establish or maintain study reference files
8	D95	Evaluate progress of resident course students
9	D96	Inspect or evaluate training aids or equipment
10	D97	Maintain training charts or graphs
11	D99	Participate in training conferences or briefings

0015	Tech School Instructor (Continued)	
12	D101	Procure training aids, space, or equipment
13	D104	Write test questions
14	D105	Write training reports

0016	CAMS Training	
1	D102	Review or annotate personnel data training forecast reports
2	Q534	Determine CAMS training requirements
3	Q537	Implement CAMS workcenter training programs
4	Q549	Plan or schedule CAMS training

0017	Shroud Drain Systems	
1	I231	Isolate malfunctions of shroud drain systems
2	I262	Perform pressure tests on shroud drain systems
3	J315	Inspect shroud drain systems
4	K388	Remove or install shroud drain system components

0018	Air Refueling Pump Leak Sense Systems	
1	I218	Isolate malfunctions of air refueling pump leak sense systems
2	I258	Perform pressure tests on air refueling pump leak sense systems
3	J275	Inspect air refueling pump leak sense systems
4	K337	Remove or install air refueling pump leak sense system components

0019	Water Systems	
1	N453	Clean water cells
2	N454	Clean water pump mounting surfaces or screens
3	N455	Drain water tanks
4	N456	Inspect water injection system components
5	N457	Interpret aircraft water injection system schematics
6	N458	Isolate malfunctions of aircraft water injection systems
7	N459	Localize water leak exits
8	N460	Operationally check aircraft water injection systems
9	N462	Perform leak path analyses on water tanks
10	N465	Remove or install water injection system components, other than pumps
11	N466	Remove or install water injection system pumps

0020	Cross Utilization Training (CUT)	
1	L411	Repair aircraft wiring segments associated with fuel systems components
2	O467	Bleed or service aircraft brake systems
3	O468	Collect engine oil samples for spectral analyses
4	O469	Isolate malfunctions on aircraft electrical systems components using multimeters
5	O470	Isolate malfunctions on fuel quantity indicating system components

0020	Cross Utilization Training (CUT) (Continued)	
6	O471	Jack or level aircraft
7	O472	Launch or recover aircraft
8	O473	Marshal aircraft
9	O474	Moor aircraft
10	O476	Operate aircraft internal electrical systems
11	O477	Perform engine inlet inspections
12	O479	Perform one-time or special instructions
13	O480	Perform over-the-wing aircraft refueling or defueling
14	O483	Remove or install aircraft electrical system components, such as switches or relays
15	O484	Remove or install aircraft environmental system components
16	O485	Remove or install aircraft wheel assemblies
17	O486	Remove or install fuel quantity indicating system components, other than fuel quantity indicating probes
18	O487	Remove or install radomes
19	O488	Remove or replace aircraft engines
20	O489	Remove or replace wind screens or canopies
21	O490	Service air charge systems
22	O491	Service aircraft hydraulic systems
23	O492	Service aircraft struts
24	O493	Service aircraft tires
25	O494	Service LOX bottles
26	O495	Tow aircraft
27	O498	Wash aircraft

0021	Ferry Tanks	
1	G138	Clean ferry tanks, such as Benson
2	G168	Prepare ferry tanks, such as Benson, for storage
3	I226	Isolate malfunctions of ferry tanks, such as Benson
4	I259	Perform pressure tests on ferry tanks, such as Benson
5	I268	Perform transfer checks on ferry tanks, such as Benson
6	J284	Inspect ferry tank, such as Benson, components
7	J285	Inspect ferry tanks, such as Benson
8	K326	Connect or disconnect ferry tanks, such as Benson
9	K355	Remove or install ferry tank, such as Benson, components

0022	Leak Detection	
1	I214	Evaluate and classify integral tank leaks
2	I216	Interpret aircraft fuel system schematics
3	I223	Isolate malfunctions of crossfeed or engine-feed systems
4	I233	Isolate malfunctions of vent systems
5	I234	Localize fuel leak exits
6	I237	Operationally check engine-feed systems
7	I246	Operationally check transfer systems

0022	Leak Detection (Continued)	
8	I263	Perform red talcum powder tests
9	K341	Remove or install boost pumps
10	K363	Remove or install fuel level control valves

0023	Aircraft Preparation	
1	H179	Bond equipment
2	H182	Check aircraft for proper fuel configuration, such as crossfeed valves closed or tanks drained
3	H187	Depuddle fuel tanks or cells
4	H190	Don or doff respirators
5	H191	Drain fuel tanks or cells
6	H192	Ground aircraft
7	H193	Ground equipment
8	H199	Notify fire departments of fuel systems maintenance
9	H200	Perform fuel system preparation checklists
10	H203	Position maintenance stands
11	H205	Purge fuel tanks or cells using blow purge method
12	H210	Review aircraft maintenance forms for deficiencies
13	H211	Rope off fuel system repair areas
14	H212	Test atmosphere of fuel tanks or cells for fire safe or health safe conditions
15	K325	Connect or disconnect B-nut-type fittings
16	K329	Connect or disconnect Wiggins-type, wig-o-flex, or minimal-type fittings
17	K373	Remove or install integral tank or fuel cell access doors

0024	Inspection	
1	J276	Inspect applied sealants
2	J278	Inspect cavities
3	J286	Inspect fuel cells
4	J287	Inspect installed aircraft defueling system components
5	J288	Inspect installed crossfeed system components
6	J289	Inspect installed engine-feed system components
7	J289	Inspect installed engine-feed system components
8	J290	Inspect installed fuel quantity indicating system components
9	J292	Inspect installed jettison or dump system components
10	J294	Inspect installed pressurization system components
11	J295	Inspect installed receiver aircraft air refueling system components
12	J298	Inspect installed transfer system components
13	J299	Inspect integral tanks
14	J300	Inspect nut plates
15	J302	Inspect removed aircraft defueling system components
16	J303	Inspect removed crossfeed system components
17	J304	Inspect removed engine-feed system components
18	J305	Inspect removed fuel quantity indicating system components
19	J306	Inspect removed fuel transfer indicating system components

0024	Inspection (Continued)	
20	J307	Inspect removed jettison or dump system components
21	J309	Inspect removed pressurization system components
22	J310	Inspect removed receiver aircraft air refueling system components
23	J313	Inspect removed transfer system components
24	J314	Inspect replacement components prior to installation
25	J316	Inspect vent system components
26	J317	Inspect vent systems
27	K332	Inspect safetying devices
28	K333	Install safetying devices

0025	Tasks not clustered	
1	A20	Serve as training advisor
2	B27	Direct engineering change proposals (ECPs)
3	B42	Interpret layout drawings, diagrams, blueprints, wiring, or schematic diagrams for subordinates
4	B52	Supervise civilians
5	B53	Supervise personnel in career fields, other than AFSC 454X3
6	C56	Evaluate ECPs
7	C70	Indorse civilian performance appraisals or supervisory appraisals
8	C72	Inspect or inventory composite tool kits (CTKs) or special tools
9	C73	Inspect work areas
10	C74	Investigate mishaps
11	C76	Perform self-inspections
12	C77	Write civilian performance appraisals or supervisory appraisals
13	D88	Determine training requirements
14	D91	Develop specialty training standards (STSs)
15	D103	Serve on debriefing teams
16	E106	Annotate or update security logs
17	E107	Design worksheets or maintenance forms
18	E109	Maintain daily production reports
19	E110	Maintain leak flowcharts or histories of aircraft fuel leaks
20	E113	Prepare ground safety reports or operational hazard reports (OHRs)
21	F118	Annotate or attach equipment status labels or tags, such as DD Forms 1574 (Serviceable Tag - Materiel)
22	F120	Annotate or review T-21 repair cycle data lists
23	F124	Establish inspection quality standards for repaired items or equipment
24	F131	Transport serviceable or reparable items to or from supply distribution points
25	G136	Check personnel for proper clothing, equipment, spark- or flame-producing devices, or removal of jewelry
26	G139	Clean or lubricate handtools or special tools
27	G140	Clean test equipment
28	G141	Clean work areas
29	G142	Collect air samples from respirator equipment
30	G143	Contain fuel spills
31	G145	Direct fuel spill clean-up procedures

0025	Tasks not clustered (Continued)	
32	G148	Fabricate ground wires
33	G149	Inspect test equipment
34	G152	Maintain fuel spill response trailers
35	G157	Maintain maintenance stand support equipment
36	G158	Operate maintenance dispatch vehicles
37	G159	Operationally check installed hangar real property equipment
38	G160	Paint equipment or facilities
39	G161	Perform operator maintenance on aerospace ground equipment (AGE)
40	G162	Perform operator maintenance on shop vehicles
41	G164	Position powered or nonpowered AGE to aircraft
42	G165	Prepare cells for storage or shipment
43	G169	Prepare parts for pick-ups or deliveries
44	G171	Purge removed components prior to shipment
45	G172	Remove or replace parts of special tools
46	G174	Serve as safety observer for tank entry personnel
47	G175	Serve on crash recovery teams
48	G178	Transport test equipment or units to or from flightlines
49	H180	Check aircraft for explosives
50	H181	Check aircraft for liquid oxygen (LOX) bottles
51	H183	Check nitrogen levels on dewar quantity gauges
52	H184	Close or open pressure limiter switches
53	H185	Connect or disconnect portable hydraulic test stands to or from aircraft
54	H186	Defuel fuel tanks or cells by transferring fuels
55	H188	Direct positioning of aircraft in hangars
56	H189	Disconnect batteries
57	H194	Inspect aircraft for presence of chocks or moorings
58	H195	Inspect aircraft for safety pin installation
59	H196	Inspect snatch cables for proper installation
60	H198	Lower vent ends for purging
61	H201	Position drip pans
62	H202	Position fire extinguishers
63	H204	Pull circuit breakers
64	H206	Purge fuel tanks or cells using exhaust purge method
65	H207	Purge fuel tanks or cells using oil purge method
66	H208	Remove or install closure panels
67	H209	Remove or install internal braces, such as formers
68	I213	Construct leak flowcharts
69	I215	Evaluate digital or analog tapes from mission recorder systems (MRSs)
70	I217	Isolate electrical malfunctions using multimeters
71	I219	Isolate malfunctions of air refueling systems of receiver aircraft
72	I220	Isolate malfunctions of air refueling systems of tankers
73	I221	Isolate malfunctions of aircraft defueling systems
74	I227	Isolate malfunctions of fuel transfer indicating systems
75	I228	Isolate malfunctions of jettison or dump systems
76	I230	Isolate malfunctions of pressurization systems
77	I235	Operationally check air refueling receiver systems

0025	Tasks not clustered (Continued)	
78	I238	Operationally check fuel level indicator sticks
79	I239	Operationally check ground defueling systems
80	I240	Operationally check ground refueling systems
81	I241	Operationally check heat sink or heat exchanger systems
82	I242	Operationally check jettison or dump systems
83	I244	Operationally check pressurization systems
84	I247	Perform air hose and external bubble tests
85	I248	Perform air hose and internal bubble tests
86	I249	Perform dye injection tests
87	I250	Perform leak path analyses on fuel cell cavity drain systems
88	I251	Perform leak path analyses on integral tanks
89	I252	Perform manifold fitting leak checks
90	I253	Perform manifold leak tests
91	I254	Perform paper tests
92	I255	Perform phenolphthalein chemical tests, such as skunk, on fuel cells
93	I256	Perform pressure box tests
94	I257	Perform pressure checks on nitrogen heat exchanger systems
95	I260	Perform pressure tests on installed fuel cells
96	I261	Perform pressure tests on integral tanks
97	I264	Perform soap suds tests on fuel cells
98	I265	Perform stand tests on self-sealing cells
99	I269	Perform vacuum bubble tests
100	I270	Perform vacuum dye tests
101	I271	Perform wet vacuum tests
102	I272	Test elasticity of sealants using blunt instruments
103	I273	Test sealants for adhesion
104	J274	Dipstick tanks
105	J297	Inspect installed tanker air refueling system components
106	J301	Inspect polyurethane foam
107	J312	Inspect removed tanker air refueling system components
108	J320	Perform dash six inspections on tanks, other than jettisonable fuel tanks
109	K324	Clean cavities
110	K327	Connect or disconnect Marmon clamps
111	K328	Connect or disconnect Roylon fittings
112	K330	Cut or shape polyurethane foam
113	K331	Fold cells for installation
114	K334	Perform bonding checks on aircraft components
115	K335	Place polyurethane foam in clean, electrostatic-free plastic bags or canvas bags for storage
116	K336	Place polyurethane foam on electrostatic-free plastic sheets for drying
117	K338	Remove or install air refueling receptables
118	K340	Remove or install backing boards
119	K342	Remove or install butterfly-type shutoff valves
120	K343	Remove or install climb and dive vent valves
121	K344	Remove or install ejector or jet pumps
122	K345	Remove or install engine in-line fuel filter elements

0025	Tasks not clustered (Continued)	
123	K346	Remove or install engine in-line fuel filter housings
124	K348	Remove or install external tank nosecones or tailcones
125	K350	Remove or install external-fixed fuel tanks
126	K351	Remove or install externally mounted aircraft fuel quantity probes
127	K352	Remove or install externally mounted electrical pumps, other than external electrical quick-disconnect pumps
128	K353	Remove or install externally mounted electrical quick-disconnect pumps
129	K354	Remove or install externally mounted hydraulic pumps
130	K356	Remove or install float switches
131	K357	Remove or install fuel cell cavity interconnects
132	K358	Remove or install fuel cells
133	K359	Remove or install fuel fill valve controllers
134	K360	Remove or install fuel fill valves
135	K361	Remove or install fuel flow transmitters
136	K362	Remove or install fuel hydraulic radiators or fuel oil heat exchangers
137	K364	Remove or install fuel level float valves, such as pilot
138	K365	Remove or install fuel level indicator sticks
139	K366	Remove or install fuel or air quick-disconnects
140	K367	Remove or install fuel shutoff valves, such as sliding gate or rotary plug valves
141	K368	Remove or install fuel system components for wing removal or installation
142	K369	Remove or install gamah seals
143	K370	Remove or install heat sink systems
144	K374	Remove or install internally mounted electrical pumps, other than internal electrical quick-disconnect pumps
145	K375	Remove or install internally mounted electrical quick-disconnect pumps
146	K376	Remove or install internally mounted fuel quantity probes
147	K377	Remove or install internally mounted hydraulic pumps
148	K378	Remove or install manifold segments
149	K379	Remove or install nitrogen heat exchanger systems
150	K380	Remove or install nitrogen or Halon gas control valves
151	K381	Remove or install polyurethane foam
152	K382	Remove or install pressure or vacuum relief valves
153	K383	Remove or install pressure regulators
154	K384	Remove or install pressure switches
155	K385	Remove or install pump housings
156	K386	Remove or install railroad seals
157	K387	Remove or install rotary vane scavenge pumps
158	K389	Remove or install single-point aircraft refueling or defueling receptacles
159	K390	Remove or install solenoid or drain valves
160	K391	Remove or install stress panels
161	K392	Remove or install telescope coupling assemblies
162	K393	Remove or install vent ends
163	L394	Buff cells
164	L395	Clean cell fittings
165	L396	Clean fuel cells
166	L397	Clean fuel pump mounting surfaces or screens

0025	Tasks not clustered (Continued)	
167	L398	Clean rotary plug valve housings
168	L399	Clean stress panels or mounting surfaces
169	L400	Coat fuel cell repairs with lacquer
170	L401	Mix chemical solvents or coatings for fuel cell repairs
171	L402	Patch bladder fuel cells
172	L403	Place protective covers on fittings
173	L404	Rebuild fuel level control valves
174	L406	Remove or install air refueling receptacle parts
175	L412	Repair boost pumps
176	L413	Repair butterfly-type shutoff valves
177	L414	Repair check valve parts
178	L415	Repair drain pump armature motors
179	L416	Repair drain pump inductive motors
180	L417	Repair sliding gate shutoff valves
181	L423	Test drain pump armature motors
182	L424	Test drain pump inductive motors
183	L425	Test gear-type pump parts
184	L426	Test rotary plug valve parts
185	L427	Test rotary vane pump parts
186	M429	Apply adhesion promoters prior to applying sealants
187	M430	Apply corrosion preventive coatings
188	M431	Apply faying surface seals
189	M432	Apply fillet seals with guns
190	M433	Apply fillet seals, such as first coat, by hand
191	M434	Apply protective topcoat sealants
192	M435	Clean damaged sealant areas
193	M436	Clean integral tanks
194	M437	Cure sealants using climate control units (CCUs)
195	M438	Deseal fuel tanks
196	M439	Flair out sealant edges
197	M440	Inject curing or noncuring sealants with high-pressure injection guns
198	M441	Make temporary repairs using aluminum foil patches
199	M442	Make temporary repairs using click patches
200	M443	Make temporary repairs using curing-type sealants
201	M444	Make temporary repairs using epoxy tabs
202	M445	Make temporary repairs using off-pressure seals
203	M446	Make temporary repairs using oylite
204	M447	Mix chemical solvents or coatings for integral tanks
205	M448	Mix sealants by hand
206	M449	Mix sealants using machines
207	M450	Prepare mixed sealants for freezing
208	M451	Remove or install mount bolts for injections
209	M452	Test mixed sealants for consistency
210	N461	Patch bladder water cells
211	N463	Perform phenolphthalein chemical tests, such as skunk, on water cells
212	N464	Perform soap suds tests on water cells

0025	Tasks not clustered (Continued)	
213	O475	Operate aircraft engines
214	O478	Perform hot-pit aircraft refueling or defueling
215	O497	Walk wings or tails during aircraft towing operations
216	Q521	Access CAMS menus and data screens
217	Q528	Change test equipment maintenance schedules in CAMS
218	Q530	Clear or close out completed aircraft maintenance discrepancies in CAMS
219	Q535	Establish CAMS job standard narratives
220	Q536	Establish test equipment maintenance schedules in CAMS
221	Q539	Input serially controlled item data
222	Q541	Input time change data
223	Q542	Monitor TCTO actions
224	Q543	Open or close CAMS
225	Q544	Perform CAMS inquiries for aircraft maintenance discrepancies, such as scheduled, deferred, or unscheduled
226	Q546	Perform CAMS inquiries for uncompleted maintenance event listings
227	Q552	Track test equipment maintenance discrepancies in CAMS

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